Typography of Devanagari

Volume One

GOVERNMENT OF MAHARASHTRA

TYPOGRAPHY OF DEVANAGARI

Volume One

by

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PREFACE

AN "OFFICIAL LANGUAGES COMMITTEE" was constituted under Bombay Government Resolution, Political and Services Department, No. OFL-1159-B, dated the 11th September 1959. One of the terms of reference was " changes in typewriters and printing presses ", relating to mechanical contrivances such as Typewriters, Monotype, Linotype and the Teleprinters. The Committee recommended setting up of Language Directorates which would undertake the work in consultation with experts on the subject. A committee of experts was thereafter constituted under Maharashtra Government Resolution, No. ADC-1162/M, dated the 25th May 1962 (modified under No. ADC-1163/M, dated the 28th February 1963), with the following members to go into the question of standardising the keyboards for typewriters and mechanical composing machines :—

CHAIRMAN

Dr. W. N. Pandit, M A, PH D, *Director of Languages, Government of Maharashtra.*

MEMBERS

Shri B. S. Naik, B A (HONS), M I PTG M (LON), F R S A (LON), *Deputy Director, Government Printing and Stationery, Bombay.*

Shri S. A. Sapre, B A, B SC (HONS), *Principal, School of Printing Technology, Bombay.*

Dr. S. V. Bhagwat, M A, PH D, *Deputy Registrar, Nagpur University, Nagpur.*

Shri L. S. Wakankar, B SC (TECH), *Proprietor, Kromo Prints, Bombay.*

Shri G. P. Vijapure, *former Manager of Kirloskar Press, Kirloskarwadi.*

MEMBER-SECRETARY

Shri N. K. Upasani, M A, M ED, D ED, *Deputy Director of Languages, Bombay.*

The Committee has studied the question of standard keyboard for Devanagari typewriters and an interim report was published in December 1962. After consideration of the comments received on the recommendations, the typewriter keyboard is now being unified and finalised.*

The standardisation of a keyboard for Linotype and Monotype machines requires a thorough examination of the typography and type founding methods of the Devanagari script. Much work on this subject has been done during last few years by many scholars and printers. Several suggestions have been made by them and a few have been accepted. It was, therefore, thought necessary, by the Committee, that before standardisation of the keyboard is attempted the whole question of Devanagari typography and type founding may be studied along with the standardisation of the Devanagari alphabet, with a view to reducing the number of types to facilitate the adaptation of the Devanagari script to the composing machines.

The Committee had preliminary discussions on the subject and decided to bring out a brochure on the Typography of Devanagari script with particular reference to the requirements of mechanical composition. One of the members of the Committee, Shri Bapurao Naik, has made intensive study of these problems. He is closely connected with the development of Linotype Devanagari during recent years. The Committee, therefore, decided to entrust the work of writing the Monograph on the " Typography of Devanagari " to Shri Bapurao Naik.

Shri Naik has taken great pains in producing this Monograph, which apart from discussing problems of the Devanagari script, gives a brief history of the Indian scripts, and deals with construction of Devanagari script, technical requirements for adaptation to composing machines, etc. He has also included a survey of the

*The typewriter keyboard has since been finally accepted by the Government of India and Government of Maharashtra for use for Hindi and Marathi and the Typewriters made according to this keyboard are now made available.

work of various scholars and printers on script reforms. It can be fairly claimed that such a comprehensive study of the problems of the Devanagari script and of the work of script reformers is being presented in a Monograph for the first time. A perusal of the Monograph will show the large amount of research that has gone into its preparation. Shri Naik has made suggestions for the improvement in Devanagari script for setting on the composing machines. These require serious consideration by scholars and experts for whose information this Monograph is being published. Comments from experts in the field will be welcomed for standardisation of the script and evolving standard keyboards for Monotype, Linotype, and the Photo-setting machines.

G. V. BEDEKAR,
Special Secretary to Government
General Administration Department

Sachivalaya, Bombay-32-BR
Dated the 28th June 1963

ACKNOWLEDGEMENTS

In the compilation of this Monograph I have received encouragement and active assistance from the renowned epigraphist A. B. Walavalkar who very kindly permitted me to incorporate in this book two of his learned papers (Appendix D pp 627-636). But for the constant pressure and active participation of L. S. Wakankar in the preparation of this book, I would not have been able to complete it. Prof. A. K. Priolkar went through the proofs of the advance copy and made valuable suggestions. I have received assistance from the typographers G. P. Vijapure and S. R. Date, the scholar friends Dr. W. N. Pandit, Dr. S. V. Bhagwat, Prof. Y. G. Naik, S. A. Sapre, and Prof. N. K. Upasani. I have made extensive use of the thesis of Dr. S. V. Bhagwat on *Phonetic Frequencies in Marathi*, in the compilation of Chapter VII and Appendix C to this Monograph. V. V. Bhat, Secretary, Mumbai Marathi Grantha Sangrahalaya, very kindly rendered all assistance in making the rare books available for photographing. I have made liberal use of the work of N. C. Joglekar and Bhagavandas Tivari on the Devanagari script. G. D. Dhond, A. K. Kelkar and the staff of the Maharashtra State Language Directorate have assisted me in calculating the frequencies. V. P. Bhagvat and S. N. Andhrutkar have shown great interest in the compilation of this volume and its production. I must also acknowledge the assistance I received from my nephew Prof. Ashok Kamat. I thank them all for their valuable assistance.

Thanks are due to Padmakar Shirgaokar, the Art Executive of the Directorate of Printing and Stationery, and the Head Artist Vasant Agaskar who assisted in designing and drawing some of the illustrations. I acknowledge the pains taken by the management of the Government Central Press, particularly R. B. Alva, G. D. Dhond, the Head Printer Atmaram Matondkar and his colleagues in all the branches of the Press in setting the text, the intricacies of which are obvious, and thank them for bringing out the book in an attractive form.

B. S. N.

INTRODUCTION

"THE PRINTING and allied trades constitute a key industry in a modern society. Their importance stems from the role which they play in the fight against illiteracy, in the spreading of culture and of information. Their activities extend to all fields (economic, social, technical, educational and cultural), whether public or private." Thus resolved the Tripartite Technical Meeting held under the International Labour Organisation at Geneva in 1962. The printing industry faces many problems in this country. One of them is the difficulty in speedy setting in Indian languages particularly in the Devanagari in which the Official Language, Hindi, is written. The Tripartite Meeting considered the problem of printing in languages having large number of characters and resolved :

"Some languages utilise a large number of characters to convey written expression and some languages use highly complex characters. These languages pose special problems for the printing trades. Among the solutions are the following :—

(*a*) hand composition ;
(*b*) simplification of the characters and a reduction in their number ;
(*c*) mechanical composition using modern machinery capable of handling a large number of characters ;
(*d*) use of hand-written texts combined with photo-mechanical techniques for reproduction ;
(*e*) use of newly developed photo-processes ;

In some situations hand composition has been found adequate. However, printing establishments could properly investigate the other methods of production mentioned above. Such techniques should properly be used by printing and allied enterprises. Furthermore, Governments should consider action to simplify the characters of the national language or languages, and to reduce their number....."

Devanagari is one of such scripts which requires investigation with a view to facilitate printing in Indian languages. Peculiar nature of the Devanagari characters and their combinations create many difficulties in type setting.

PECULIARITY OF THE DEVANAGARI SCRIPT

The Devanagari script is not completely alphabetic. The vowel and consonant graphemes shed some of their elements and also undergo graphemic change when they combine to form Phono-graphic graphemes. Thus क modulated by इ becomes कि, धर्म becomes धर्म (vertical phono-graphical conjugation) and विद्या is written as विद्या (lateral conjugation). This peculiar behaviour of the Devanagari script has been arresting the

progress of printing in this country. Although the printing press arrived in India in 1556 books were not printed in Devanagari till 1796, when John Gilchrist printed his "*Grammer of the Hindustanee Language*" at the Chronicle Press in Calcutta.* Fr. Stephens, the author of *Christian Purana*, written in Marathi, had to print it in Roman script. He says in this connection :

"I very strongly desired to see in this Province some books printed in the language and the alphabet of the land, as there are in Malabar with great benefit for that Christian community. And this could not be achieved for two reasons : the first because it looked impossible to cast so many moulds amounting to six hundreds, whilst the characters are syllables and not alphabets as our twenty-four in Europe.... The difficulty has its remedy in this that these moulds can be reduced to two hundred."†

The earlier type-founders had to cast as many as one thousand and more type sorts to complete a fount of Devanagari. The fount currently sold by the Nirnaya-Sagar Type-foundry, inclusive of conjuncts contains as many as 600 characters. The same type-foundry, a century ago, introduced three-step-setting known as the *Degree* system, in which the main character is cast on half body, *i.e.* on 6 pt. body size for 12 pt. overall size. The *mātrās* going on the top and *ukārs* set up at the bottom are cast on quarter body each. Justification of lines in this scheme becomes very troublesome, *degrees* spring up, they drop out while printing loosening the type matter, which resuls in displacement of the vowel elements. Modern printing technique involving the use of fast letter-press printing machines does not admit hand-set matter of this nature.

Attempts at the Mechanisation of Devanagari

The mechanical composing machines and typewriters designed for alphabetic scripts cannot therefore be made use of for Devanagari unless its setting is brought on linear basis. The Late Lokmanya Tilak worked on linear setting of Devanagari and got some types cast, according to his scheme, as early as 1904. Since then the question of script reforms is being discussed throughout the country. G. P. Vijapure, the then Manager of the Kirloskar Press, was granted a patent for his scheme of linear setting of Devanagari on August 27, 1930. His scheme was based on the method originally suggested by the Late Lokmanya Tilak. S. R. Date succeeded in adapting the Devanagari script to the Monotype machines by cutting types with overhangs supported by

* A. K. Priolkar, *Printing Press in India*, Bombay, 1958, p. 62.
† A. K. Priolkar, Letter dated 5th December 1608 in "Two recently discovered letters of Fr. Thomas Stephens" *The Journal of the University of Bombay*, Vol. XXV, Part II, September 1956, p. 123.

the shoulder hight of the *mātrā-ukār* types or the high-space. The hazards of modern stereo-typing technique demand a firm type face, supported by solid metal base. The Monotype Devanagari with its overhangs does not satisfy this requirement. On fast running web-rotary machines a provision is made to print the 'stop press' from slugs inserted in the fudge-box, while the machine is running. This facility cannot be made use of when Monotype matter is used in newspaper setting. Slug composing is thus more suitable for news setting.

Owing to the high number of characters in Devanagari, its satisfactory setting on the mechanical composing machines presents a serious problem. Hari G. Govil, then sojourning in America, was responsible for the Linotype Devanagari which was introduced in the early thirties. The Linotype Devanagari designed by Govil, as also the Intertype Devanagari, are not popular, as in adapting them to the Slug Composing Machines in linear form, the *mātrās* had to be straightened. The Printing Department of the Government of Maharashtra with the assistance of G. P. Vijapure has now succeeded in improving upon the mechanised Devanagari.

Standardization of the Devanagari

The difficulty typographers have to face in adapting Devanagari to the slug composing machines, can well be understood from the fact that the Devanagari script was not standardized. The script used for hand-writing, with its peculiar ways of constructing conjuncts in order to save space, obviously does not render satisfactorily to the type-casting, even for hand-setting. The earlier typographers and punch-cutters introduced some innovations, which became firmly established not only because they facilitated hand-setting but because the faces which were cut by these punch-makers were elegant and contained aesthetic quality. These faces created such a good impression amongst the readers, that any deviation from the basic face, newsoever economical and desirable from other points of view it may be, was just not acceptable.

As mentioned earlier script reformers and typographers were at a disadvantage as the script itself was not standardized. The subject is being discussed for the last sixty years. Many literary conferences, and committees* spent much time in discussing the various reforms, both from the point of view of perfecting the script on phonetic basis and also suggesting some changes to facilitate mechanical composition. The question was not however dealt with at the appropriate level till

**See* Appendix B, pp. 569-597.

a conference was convened by the U. P. Government at Lucknow in 1953. Change in the script or language is basically a question of such nature that its introduction needs the backing of the leaders working in the academic field as well as political field, so that it can command general acceptance in the country. The Lucknow Reforms were agreed to in a conference where the leaders of the Central and the State Governments and many scholars were present.* The decisions were then circulated to the State Governments for acceptance. Some of the suggestions contained in the Lucknow Reforms, such as the new design of short इ sign (ि), were not acceptable to many. Further discussions were held on the subject and the Government of India finalised the standardization of the script for the Devanagari setting. Some other State Governments have also accepted the standardized script with very slight modification.†

Three Groups of the Script Reformers

Throughout the script reforms movement there have been three group of persons having three distinct opinions. One is of those who believe that the adaptation of the Devanagari to the mechanical contrivances, currently available, will be economic and that major changes in the make-up of the script are unavoidable unless we are ready to accept the Roman script. P. B. Kale of Nagpur vigorously advocated this view. The second group of script reformers is opposed to major changes in the script and would like to explore the possibilities of altering and improving the machines to suit the script. Late Pandit Ravishanker Shukla, Chief Minister of Madhya Pradesh, had put up this view in a note which he submitted to the Lucknow Conference. He said :

"As Devanagari is not fully suited to the modren mechanical contrivances as they are, many persons are apt to rush to the conclusion that the most obvious solution lies in effecting radical changes in the script to make it suit the requirements of the machine. We, on the other hand, are of the opinion that this is a challenge to our ingenuity and with the rapid advancement of Science, it should not be difficult to effect such improvements in the machines themselves as would render it unnecessary to make any basic changes in the character of our script. If we wish to retain our script without any radical changes and thus preserve the tradition of our cultural heritage unbroken, it is our bounden duty to make earnest attempts in this direction. Our entire future is bound up with the decision of this conference. I would, therefore, make a plea here for setting up a Research Institute which could be entrusted with the task of inventing mechanical devices essentially suited to the genius of the Devanagari script or giving State support to such institutions as are already working in the field."

*For the list of Members of Steering Committee, *see* Appendix B, p. 590.
†*See* Table 60 pp. 354-361.

The third group is of those who feel that there should be no opposition to effect *minor* changes in the script with a view to facilitate composition both by hand and on machines. This group also believes that it is possible to adapt the Devanagari satisfactorily to the mechanical composing machines with very few changes made without much altering the basic graphic design of the Devanagari letters (*Akṣarās*). The author belongs to this group.

I was attracted to this subject in 1941 when the Devanagari script reforms were discussed at the Sholapur Session of the Conference of Maharashtra Printers held under the presidentship of Y. R Date. The Poona monthly *Mudran Prakash* under the editorship of S. R. Date was then publishing articles on script reforms. I reviewed the progress of the script reforms with particular reference to the mechanical composition in two articles which were published in *Sameeksaka*,* a literary fortnightly, edited by my colleague D. V. Amonkar and published from Bombay. Ever since, I have been closely following the progress made in this respect and have studied the work of the earlier script reformers who made valuable contributions to this subject.

Vijapure System of Lino-type Composition

The Government of Bombay installed two Linotype machines with Devanagari type founts at the Government Central Press, Bombay, in 1952. A revised layout of the keyboard suitable for a plain machine was then proposed by the present author. These Linotype founts were not however made use of, owing to the defects in the design of the *mātrās*. The Printing Department of the Government of Bombay, therefore, enlisted the services of G. P. Vijapure for improving the Linotype Devanagari in order to make it more acceptable. G. P. Vijapure designed the *mātrā* characters and also the *rafār* characters as required for the standardized Devanagari script as accepted by the Government of India and also the Government of Maharashtra.

In this system of linear setting there are 189 matrices for Hindi inclusive of ten numerals, fourteen signs and three spaces, of which 90 are accommodated on the main keyboard and the remaining in the sorts sidecase. There are six characters in the standardized Devanagari used for Hindi, which are modified in their use in Marathi. The net requirements of matrices for standardized Marathi exclusive of the numerals, signs and spaces is 157.† The number as it stands is still high and is required

* 'लिपि-शुद्धि प्रयत्नांचे महत्त्व मापन' *Sameekshaka*, Bombay, April 1941.
† *See* Table 67, p. 418.

to be further reduced. But it is not possible unless some more changes are effected in the standardized Devanagari, which are indicated in Chapter XV of this Monograph (para. 368).

Need for further Reduction in the Devanagari Graphemes

The printing technique has developed during recent years at a very fast speed and we are now thinking in terms of photo-composition. In the Lino-film and in the Lumi-type a standard typewriter keyboard is made use of, where the maximum number of characters, which can be accommodated, is much low. The introduction of the Computors in this field has revolutionalised the type-setting. The production on paper tape in this method, can be increased to over 1,00,000 characters per hour as against about 10,000 in the earlier methods. If we were to keep pace with this modern development, it is absolutely necessary that we further reduce the number of characters in the Devanagari script. Before one embarks on such a task it appears necessary to acquaint oneself thoroughly with the origin, development and the nature of the Devanagari script, the problems involved in setting it by hand on the composing machines and on the photo-composing machines, in their proper perspective and also study the history of script reforms. In this Monograph I have made use of the work so far done by the scholars and typographers. I am indebted to them. To facilitate discussion on the problems and for easy reference I have given brief summaries of the work of the script reformers.*

Scope of this Monograph

I undertook to write the Monograph on Devanagari at the instance of the Committee appointed by the Government of Maharashtra for Standardizing the Devanagari Keyboards. I then intended to compile only such information on the subject, which would be useful for formulating a Scheme for the Devanagari Keyboard. The original draft of the Monograph was ready early in 1962. The same was set up and advance proofs circulated to the members of the Committee for their comments. The general opinion of the members and also others interested in the subject, who had occasion to go through the draft, was that the scope of the Monograph should be widened. I had also realized the necessity of doing so, during my discussion on the various problems of the Devanagari type-setting, with the printers, typographers, as well as the manufacturers of the type composing and photo-setting machines, both in this country and outside.

* Appendix A. " Notes on the work of Script Reformers " pp. 475-564.

Need for further Research on Devanagari

It would be enlightening to note here the interest that is being taken in some of the foreign countries in the typing and setting methods in Devanagari and other scripts of the East Asian countries. I have referred to the studies carried out by Prof. Caldwell and others in the United States in Chapter XVI.* The Mechanical Engineering Division of the U.S. Army Natick Laboratories has produced a report covering 78 pages on this subject. They are seized with the problems of developing military type-setting equipment and systems for Indo-Aryan languages as " the Mechanical Engineering Division seems to feel that the U. S. Army Units *may have occasion to communicate in writing with the populations of those areas of India* that read or speak these languages". According to this report out of 179 languages " 8 will suffice for military indoctrination purpose ". The report records that until the Indian scripts are mechanised, two alternatives may be used :

(1) *Transliteration of indoctrination material in the Roman alphabet.*— This is however not considered effective as the report states " that Indians tend tc ignore and sneer at any attempt to transliterate their language ".

(2) *Preparation of the material in English language.*—This is also not considered satisfactory because " the Indian populace is highly nationalistic and tends to disregard, or completely reject, printed material unless it is prepared in the native language of the land".

In view of the acceptance of the policy to encourage the growth of the Indian Languages, the spread of literature and also to carry on the business of administration in the Indian Languages, it is high time intensive research is undertaken in the field of studies in Linguistics, Pleography and Typography. My book is a humble attempt in this direction, necessarily limited to the study of Devanagari and its typography in all the relevant aspects.

The Monograph is divided in three volumes. First volume deals with " Origin and Development of the Art of Writing in India". And " Calligraphy and Typography of Devanagari ". Second volume deals with " Devanagari type setting by hand, mechanical and photo-composing methods " and includes " Frequency study of Devanagari graphemes ". Five appendices are included, the first two of which (A and B) deal with summaries of the contributions made by various script reformers, and

*Chapter XVI—Graphemic Frequencies of Devanagari, p. 425.

the committees appointed by the Government and literary bodies. Appendix 'C' is based on Dr. Bhagwat's tretise on 'Phonetic Frequencies of Devanagari.' A. B. Walawalkar, who has shown great interest in this work, has contributed two original articles which have been included in Appendix 'D'. An account of the formulation of Standard Devanagari Typewriter Keyboard is given by L. S. Wakankar in Appendix 'E'.

Most of the type faces currently available for book work in Devanagari are cut in the last century and in the first quarter of the present century. I have dealt with the history of Devanagari type cutting in chapters VIII to XI (volume I, pages 227 to 324). In the third volume facimile reproductions of printed pages from most of the books referred to in these chapters have been reproduced. Bibliographic information about the books, mentioned with typographic notes is also given. I wanted to reproduce these pages in their original sizes, which however could not be done since the text was already set up in A-5 size. Some specimen pages therefore had to be reduced in size. The original sizes and type measures are mentioned in the bibliography. I propose to reproduce these pages in their original sizes in subsequent edition.

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Typography of Devanagari

PART ONE

Origin and Development of the Art of Writing in India

(Chapters I to V)

CHAPTER I

ANTIQUITY OF WRITING IN INDIA

The Indian Script is known as *Lipi*, a word derived from the Sanskrit root *Lip = to annoint, to smear*. The terms *Lipi*, *Libi* and *Lipikāra* are found in Panini[1] who flourished in the eighth century B.C., according to Goldstücker. Bhattoji Dikshit confirms the derivation of the word *Lipi* in his commentary on *Amarakoṣa*[2]. The reason for the use of the term *Lipi* is that, unlike the western scribing on stone or wood, the Indians mostly used to write on palm-leaves, barks of trees and cloth. Lord Brahmā is credited with the production of letters drawn on leaves.[3] The importance of written documents was accepted as evidence in the legal matters in the Hindu law books like the *Nārada Smṛti* ascribed to the fifth century A.D. The author of the *Nārada Smṛti* also credits Lord Brahmā with creation of the script.[4] It is interesting to note that the term *Varṇa*, which means colour, is used in Sanskrit[5] for 'character'. Max Müller however believed that the word *Varṇa* "does not mean colour in the sense of a painted letter but the colouring or modulation of the voice."[6] Max Müller was not aware of the Indus Valley civilization and the writing on the seals which were subsequently discovered. Writings on potsherds and punch-markings on coins have also been discovered which takes us five thousand years back.

SCRIPTS IN USE IN ANCIENT INDIA

2. Two kinds of scripts, one normally written from left to right and the other in the reverse direction, flourished in India before third century B.C.* The former is known as Brahmi and the latter as Kharoshthi† (Zarthustri). The Brahmi letters written on the Eran Coin‡ (fourth century B.C.), found at Eran, an ancient city, fifty miles to the north-east of Bhilsa, run from right to left.[7] Kharoshthi is written from right to left in the early inscriptions. Asoka's Minor Edict§ found at Yerragudi, Karnool, is inscribed in Brahmi in boustrophedon or alternating lines.[8] The Mauryan inscriptions are engraved in both these scripts on rocks, pillars and cave walls, all over India. There is however no similarity in

* *See* Plate 1(a), Brahmi Inscription and Plate 1(b), Kharoshthi Inscription.
† Diacritics are omitted from the words Brāhmī and Kharoṣṭhī.
‡ *See* Plate 2(a), Eran Coin. § *See* Chapter II, Plate 29.

these scripts in respect of the graphems. The Piprāhvā* Buddhist vase inscription found in Basti district of Uttar Pradesh which refers to a relic casket containing a portion of the remains of Buddha obtained by the Sākyās, dates back to just after 487 B.C.[9] The exact date when the Indian scripts had reached the phonographic stage is, however, not yet known. The word *Bambhi* occurs in old Jainist *Bhagavatīsūtra*[10] while eighteen scripts are mentioned in *Paṇṇavaṇā-sūtra* which include *Bambhī*, *Kharoṭṭhi*, *Āyasalivi*, *Māhesari*, *Tevanaiyā* (*Veṇaiyā*) and *Javanāli* (Greek). The *Lalita-vistara* mentions[11] as many as sixty-four scripts including Brahmi, Kharoshthi, *Draviḍa*, *Kanari*, *Chīna*, *Hūṇa*, *Deva*, *Yakṣa*, *Gandharva*, *Kinnara*, *Asura*, *Uttarkurudvīpa*, *Aparagauḍa* and *Pūrvavideha*. (*See* Annexure A,[11] page 21).

Oral Tradition of preserving Literature

3. The early orientalists, however, believed that the Indians did not have a writing system and that they merely transferred their scriptures from generation to generation by the hard process of learning them by heart. Max Müller says : " There is no mention of writing materials whether paper, bark or skins at the time when the Indian Diaskeuasts collected the songs of their Rishis ; nor is there any allusion to writing during the whole of the Brāhmaṇa period. This upsets the common theories about the origin of prose literature. According to Wolf, prose composition is a safe sign of a written literature. It is not so in India. The whole of the Brāhmaṇa literature, however incredible it may seem, shows not a single vestige of the art of writing. Nay more than this, even during the Sūtra period all the evidence we can get would lead us to suppose that even then, though the art of writing began to be known, the whole literature of India was preserved by oral tradition only."[12]

4. This assumption originated from the fact that Indian grammarians in spite of evolving the world's (phonetically) most efficient system of writing, realised that no writing can convey thoroughly all the shades of the meaning of the spoken word; " wrongly pronounced words (vowel or consonant) would kill the *yajamāna*."[13] In order to preserve the Vedas the Hindus laid stress on learning them by heart, imparting them from teacher to pupil and deprecated all tendencies to rely on writing.[14] Some Vedic teachers did use written texts, although such a practice was not considered honourable.[15] The *Mahābhārata* (fourth century B.C.), stated to have been taken down in writing by Ganesha,[16] nevertheless

* *See* Plate 2(b), Piprāhvā Inscription.

states that ' Scribes of Vedas will go to hell '.[17] Specific references of writing are found in the *Arthaśāstra*[18] which is ascribed to the fourth century B.C. Another reference warns that ' Books cannot preserve knowledge '. ' Knowledge reduced down to the book, like loaned money, will be of no use in time of need.'[19] The scholars in the West, as pointed out in para. 3 above, only took note of the fact that the Hindus relied on learning the Vedas by heart and inferred therefrom that the Hindus had not known any writing. This further led them to believe that, the Hindus must have learnt the art of writing from the Greeks.

Writing during the Vedic Period

5. Much internal evidence has since come to hand which confirms that the art of writing was known in Ancient India. *Ṛg-veda* says that ' a man does not perceive speech even *looking* (perceiving) at it.'[20] Writing on *Bibhitaka* is mentioned in *Ṛg-Samhitā*.[21] *Śatapatha Brāhmaṇa* refers to the *Ṛṣi* Vāmadeva obtaining the *Ṛg-veda* hymn (IV.26.1) by seeing it. *Aitareya* says, the *Ṛṣi* read the hymn (II.41.2) after he looked at it.[22] This indicates existence of writing or written speech, i.e. transformation of speech into script, a perceptible form. Marking of the ears of cows[23] ' eight-marked ears ' is also mentioned in *Ṛg-Saṃhitā*. Marking of the ears with *Mithuna* sign is referred to in the *Atharva*. It also states " He that pierces her ears is estranged from the Gods. He thinks: ' I am making a mark (upon her) ' (but) he diminishes his own property ". Panini refers to the practice of marking of the ears of cows with signs and figures.[24] He also mentions *Mahābhārata* as a book with leaves fastened together forming a *Grantha*.[25] *Gaṇaka* (an astronomer) is included in the list of people mentioned in connection with *Puruṣmedha* in *Yajur-veda*.[26] The same Veda refers to the ' hearing of sound of letters '.[27] Writing of accounts of gambling is clearly recorded in the *Atharva*[28] and certain hymns refer to bricks bearing the name *Swayam-matṛkā*, inscribed with names of Indra and Agni. In the *Atharva-veda* a reference is made to keeping down the Veda (Book) from the box from which it was taken out.[29] *Atharva-veda* says ' whatever is written in a good manner is worth seeing '.[30]

Writing during the Brahmana Period

6. Measurements of time are given in the *Śatapatha Brāhmaṇa*. The minutest measurement mentioned therein is *prāṇa* which works out to one-seventeenth of a second.[31] Such calculations cannot be made without the help of writing. Reference is made in the same work

to incision of poetry 'in lines of letters' on bricks.[32] *Taittarīya* mentions vowels, consonants and *mātrās* "We shall explain orthoepy, the letters are accents, the syllables are power, the songs are alphabets. The chapter on orthoepy is explained."[33] *Akṣara* or letter is mentioned to mean vowel in *Ṛkprātiśākhya*.[34] *Akṣara* (syllable) is also referred to in the *Chhāndogya Upanishad*. "Now one ought to meditate upon the sevenfold *Sāma* which is uniform in itself and leads beyond death. *Hinkāra* has three syllables and *Prastava* has three syllables".[35] *Praṇava* (ॐ) is called *Akṣara* or *udgītha* in *Chhāndogya*. "One ought to meditate upon the syllable *om* the *udgītha* Now really that which is, *Udgītha* is *Praṇava* and that which is the *Praṇava* is *Udgītha*".[35] The word *Akṣara* means 'not perishable' and is used to signify both *Brahmā* and *Varṇa* (letter). The admissibility of written documents as legal evidence is mentioned in *Viṣṇu Dharmasūtra* and *Vaśiṣṭha Dharmasūtra*. "There are three kinds of proof, which give a title to property, (*i*) documents, (*ii*) witness and (*iii*) possession.....If the statements of the neighbours disagree, documents (may be taken as) proof. If conflicting documents are provided, reliance (may be placed) on (the statements of) aged (inhabitants) of the village or town and on (those of) guilds and corporations (of artisans or traders)".[36] The discussion in the *Nirukta* of Yāska, a treatise on etymology of words written before Panini[37] and the *Vedānga Śikṣā*, a work on phonetics, presupposes the existence of a system of writing. They also contain terms referring to writing. Panini and Yāska have referred to several authors on grammar and other subjects. Ojha opines that it is impossible to believe that they had committed all these works by heart, to be able to refer to them. He therefore infers that these treatises must have been available to Panini and to Yāska in written form.[38]

Aitareya Āraṇyaka contains amongst other things references to the phonetic classification of the letters of the script.[39]

(*i*) The consonants are the body, the vowels the soul, the sibilants the breath.....Of this produced as a thousand *bṛhatis* there are thirty-six thousand syllables. So many thousands are the days of a hundred years. They make up the nights by the consonants, the days by the vowels.

(*ii*) The former syllable is the former half, the latter the latter half. The space between the former half and the latter half is the union..... The former syllable is the former half and the latter syllable the latter half but that the union is the space between the former and the latter half, in so far as, thereby one produces the union and distinguishes accented and unaccented and separates the mora and what is not.

(*iii*) 'Of this self the truth is like the sibilants, the bones, the mutes, the marrow, the vowels and flesh and blood the fourth part the semivowels' so said the Hṛasva Maṇḍukeya.

(*iv*) The mutes are the earth, the sibilants the sky, the vowels heaven. The mutes are fire, the sibilants air, the vowels the sun. The mutes are the *Ṛg-veda*, the sibilants the *Yajur-veda*, the vowels the *Sāma-veda*. The mutes are the eye, the sibilants the ear, the vowels the mind. The mutes are the up-breathing, the sibilants the down-breathing, the vowels the back-breathing. Then comes the divine lute. The human lute is the imitation of it.....Then comes the essence of speech. When a man reciting or speaking at an assemble gives not pleasure let him recite this verse. "May the she-ichneumon, that rules all speech, who is covered as it were by the lips, sorrounded by teeth, the thunderbolt, cause me to speak well here". This is the essence of speech.

(*v*) Of that *Saṃhitā* the letter *ṇ* is the strength, the letter *ṣ* the breath, the self. He who knows the verses in the *Saṃhitā* and the letters *ṇ* and *ṣ*, he knows the *Saṃhitā* with its breath and its strength. Let him know that this is life giving. If he is in doubt whether to say it with a *ṇ* or without an *ṇ*, let him say it with a *ṇ*. If he is in doubt whether to say it with a *ṣ* or without an *ṣ* let him say it with a *ṣ*.

Aitareya Brāhmaṇa explains[40] the construction of letter ॐ by combination of अ, उ and म. *Chhāndogya* refers[41] to *i-kār*, *u-kār*, etc., wherein *kār* appears to mean written form. *Kāmasūtra* mentions books and writing of accounts in clear terms.[42]

Writing during the Buddhist Period

7. Winternitz says ".....From such facts one would conclude that at the time, that is, in the fifth century B.C., the idea of the possibility of writing books had not as yet occurred at all. Such a conclusion however would be too hasty for it is a strange phenomenon that in India from the oldest times uptil the present day, the spoken word and not writing, has been the basis of the whole of the literary and scientific activity."[43] In the Buddhist work *Sīlas*[44] dating about 450 B.C., a game named *Akkharika*, meaning 'about letters' is mentioned. In this game the children have to guess letters traced with the fingers in the air or on the back of a play-fellow. The Bhikkhus were not however permitted to indulge in this sort of pastime;[45] but *lekhana* (art of writing) is recommended to them.[46] The profession of scribing then provided means of livelihood for the commoners.[47] The *Pārājika* section of the *Vinaya-pitika* declares that Buddhist monks shall not 'incise' (*chind*)

'the rules which show how men may gain heaven or riches and fame in the next life through particular mode of suicide '.[48] *Pattraka* or manuscript is referred to in the Jātakas. Letters—*paṇṇa* (*Mahāsut soura jātaka*) writings, Royal proclamations, bonds—*iṇapaṇṇani*, etc. are mentioned in the Jātaka stories. The *Katāhaka jātaka* tells a story of a servant of a businessman forging a letter on a *paṇṇa*, and attesting it with his master's seal with the intention to marry the daughter of another businessman. According to the *Rurujātaka*, King of Kashi caused a stanza to be engraved upon a tablet of gold *suvaṇṇapaṭṭa* announcing a reward for finding out the whereabouts of a gold coloured deer, on which his wife Khema had set her heart. The following stanza was read out to the towns people :

"Who brings me tidings of that deer choices of all the breed."
"Fair women and a village choice who wins him for his need".[49]

8. Orders of Buddha, Canons of the *Kuru* community (*Kurudhamma jātaka*) were engraved on gold sheets. A promissory note *iṇapaṇṇa* is mentioned in the *Rurujātaka*. Bühler has noted a direct reference to book (*Potthaka*) in the Jātaka works. The *Kaṇṇha Jātaka* mentions[51] reading of inscribed lines from gold plate. *Lekhana*, writing is mentioned as a subject taught in the primary schools, referred to in the *Lalita-vistara* as *Lipiśālā* which the Buddha attended.[52] The *Hāthigumphā* Inscription* of King of Kalinga, found at Kharvil (165 of the *Maurya Era*) mentions writing tables and accounts.[53] Writing (*lekha*) is praised in *Vinaya Piṭaka* (IV-7 and 305). The *Mahāvagga* tells us that writing (*lekha*) arithmetic (*ganana*) and accounts (*rūpa*) were taught and practised, but by writing 'fingers will become sore'; by arithmetic 'breast will become diseased'; by keeping accounts 'eyes will suffer' and therefore the parents of Upāli preferred to make him a Bhikku 'Who keep commodious precepts and live a commodious life; they have good meals and lie down on (gilted) beds protected from wind'.[54] The same work mentions 'At the royal palace a proclamation was *written* 'where he (robber) is seen, he is to be killed'. It prohibits proclaimed thieves, whose names have been published in writing (*Likhita cocaro*) getting entry in the *Sangham*.[55]

9. The Greek traveller Megasthenes who visited India and stayed in Pataliputra for over six years (305 B.C. to 299 B.C.)[56] as ambassador of the court of Sandrakottos, was believed to have declared that the Indians used no letters at all. My enquiries, however, reveal that

* *See* Chapter II, Plate 23(c) for extract from the *Hāthigumphā* Inscription.

Megasthenes has been wrongly interpreted in this respect by the early western scholars, without verifying the source. Dr. Schwanbeck collected a fragment from Strabo which reads "Megasthenes says that those who were in the camp of Sandrakottos, wherein lay 4,00,000 men, found that thefts reported on any one day, did not exceed the value of two hundred drachmoe and this among a *people who have no written laws but are ignorant of writing and must therefore in all the business of life trust to memory*."[57] The reference here is only to the *men in the camp* who were illiterate. Megasthenes has on the contrary recorded the fact that writing was then practised by the Indian Philosophers (Brahmins). He has recorded the use of almanac in relation to *Varṣaphala* (prospects of the year) thus: ".... at the beginning of the new year all the philosophers repair to the King at the gates. Here any of them who may have *committed anything useful to writings* or observed any means for improving the crops and cattle, or anything of advantage to the state, declares it publicly.[58]

Goldstücker on Antiquity of Writing in India

10. Goldstücker believed that the Hindus were not ignorant of the art of writing even during the Vedic times. He argues :

"No one, I believe, will easily imagine a civilized people who at the time of the *Mantras* (the period prior to that of the *Sūtras* and *Brāhmaṇas*), were such as to possess "arts, sciences, institutes, and vices of civilized life, golden ornaments, coats of mail, weapons of offence, the use of precious metals, of musical instruments, the fabrication of cars, and the employment of the needle .... the knowledge of drugs and antidotes, the practice of medicine, and computation of the divisions of time to a minute extent, including repeated allusions to the seventh season or intercalary month" ...and again, "laws of inheritance, and of simple contract, or buying and selling," "differing little, if at all, from that in which they were found by the Greeks at Alexander's invasion," no one, I believe, will easily imagine a people in such a state of civilization unacquainted with the art of writing, though no mention of this art be made in the hymns to the gods."[59]

11. In commenting on Max Müller's reference to the total absence of words such as writing etc. in the Vedic literature, Goldstücker reminds us that it was not the purpose of the Vedic hymns to tell us that pen and ink were known to the Aryans. Winternitz says that "the fact that in the older literary works there is no mention of manuscripts is not

absolutely a proof of the non-existence of the latter. Perhaps they are not mentioned only for the reason that the writing and reading of them was of no importance, all teaching and learning being done by word of mouth".[60] Goldstücker points out that chapters are called *paṭalas* in the *Sūtras* which denotes covering, the surrounding skin or membrane. It is also used for a tree and seems almost synonymous with *liber* and βίβλος and means a sheet of paper made of the surrounding bark of trees. The word *kānda*, which means part of the trunk of a tree, is used for division in the *Taittiriya-Saṃhitā* and *Brāhmaṇas*, and later applied to denote chapters of ritual books, or ritual books themselves. MSS. written on palm-leaves, are pierced in the middle, and kept together by means of a "string" or *sūtra*. "String" later become the name of "book" as "*Band*" in German.[61]

References to Writing in Panini

12. Panini mentions *grantha* in *Aṣṭādhyāyi* at several places.[62] *Grantha* has been interpreted to mean 'composition' by some Western Scholars. The use of the term *grantha* in *Mahābhārata*, however, clearly brings out the literal meaning which is 'a bound book'. "*Vaṣiṣṭha* warns (Janaka) that the text (*grantha*) of the Vedas and *Śāstras* is possessed by thee, (text which thou hast uttered, is rightly uttered by thee) yet, king, thou dost not know the real sense of the text (*grantha*) of the Veda and *Śāstra* for he who is merely bent upon possessing the text (*grantha*) but does not understand the real sense of the text, his possession of them is an idle one ; he carries the weight of the book '(*Bhāram sa vahate tasya granthasya,*) who does not know the sense of it ; but he who knows the real sense of the text (*grantha*), his is not an idle acquisition of the text.[63] The term *kāra* is used in Sanskrit literature. It has been stated that by suffixing *kāra* to a vowel or consonant sound, their visual form is specified. Goldstücker however points out that when Panini speaks[64] of two *varṇas*, *yi*, (*i.e.* of a *varṇa y* and of a *varṇa i*), he does not mean the spoken sound, but the written sign, "since the value *y* without a vowel would be unpronounceable". Weber considers[65] the terms *swaritet* and *udāttet*, used by Panini, "founded on graphical appearance." Of the three accents, *udātta*, *swarita* and *anudātta*, the two latter only are marked in the principal Vedic writings, the *swarita* being indicated by a perpendicular line over the syllable, the *anudātta* by a horizontal line under it. The syllable not marked is *udātta*.

13. Panini refers to the hymns as 'seen'. The commentator says

"The affix अण् (IV.1.83) comes after a word in construction in the instrumental case in the sense of 'seen'. The thing 'seen' by the one whose name is in instrumental case being the *Sāmaveda*.[66] Yāska says[67] that "The *Ṛṣis* 'see' the hymns with all kinds of intentions". He also mentions son of Upamanya who defined the word "*Ṛṣi* as coming from seeing, for he saw the hymns". Kaiyyata mentions[68] the symbol of क. Yājnyavalkya says[69] "All the religious orders must certainly have the desire of knowing the Veda; therefore, the first three classes should *see* it, think of it, and hear it."[70] Goldstücker concludes[71] "Panini not only wrote but writing was a main element in the technical arrangement of his rules".

Writing Material used in India

14. The Indian scripts have undergone many changes in the design of the graphemes due to the variety of the writing materials in use, such as rocks, pillars, gold-plates, silver-plates, copper-plates, palm-leaves, birch-bark and cloth.

Use of Stone and Metal for Engraving

Stone : Rock was the principal writing material in use in ancient India. Emperor Asoka got his edicts inscribed on rocks and on stone pillars.* Stone slabs and pedestals used to be inscribed with Grant-deeds, Royal eulogy, Agreements, Dedication, Commemoration, etc. Before inscribing, the stone used to be dressed by chiselling and polished by rubbing. Carving on rough stone was not uncommon. The letters were then written with ink or painted with brush. The engraver incised the letters on the inked or painted portion.

Metal : There is only one find of iron inscription on Mihrauli Iron Pillar at the Qutub Minar. Precious metals, gold and silver† have been used for engraving and casting with characters. These metals were used for Grant-deeds and royal letters. *Kaṇha-Jātaka* states "Kaṇha Kumar took in his hand a golden plate, and reading upon the golden plate the lines inscribed by his kinsmen of the former days 'so much of the property by such and such one and so much by another'.[72] Bhattiprolu silver-plate inscribed with an official document has been cited as an example by Bühler. Gold-plate, silver-plate and silver-vase incsriptions have been found with Kharoshthi inscriptions[73]. Engravings of *Yantras* on gold and silver were used in the *Trantric* worship.

* *See* Plate 4 for an Asoka inscription. † *See* Plate 5(*a*) for silver inscriptions.

Palm-leaf and Birch-bark

15. In ancient India the material for writing documents or literary compositions or scriptures consisted of two kinds. The first was more common in use and is of clear Indian origin. It consisted of palm-leaves, *tāḍapatra* (*borassus flahelliformis*, *corypha umbraculifera* and *c. taliera*). It was common in the south where plam trees grow. The second was *Būrja-patra*, common in the north. In both the cases the leaves of the *grantha* used to be held together by a string or *sūtra*. This method was convenient owing to the habit of squatting while writing. In that posture holding a single leaf in hand with thumb and finger was easier than holding a bound book. The Taxila Copper-plate which dates to the first century A.D. is fashioned after a palm-leaf. According to a reference in the life of Huien Tsiang the Buddhist Canon was written on palm-leaves at the first council held immediately after the death of Lord Buddha.[74] The MSS of *Vinaya* texts was written on palm leaves. Upali who collected the *Vinaya piṭaka* immediately after the passing away of Lord Buddha marked the MSS with a dot and followed the same method of dating by marking with a dot every summer. The MSS. was taken to Canton in A.D. 489 when it had 975 dots which indicates the antiquity of the MSS.[75]

Tada-patra : Palm-leaf

16. The individual leaves of *tāda* were properly selected and processed for inscribing or writing purposes. First they were dried, without directly exposing to the sun, then they were boiled. and dried in the open air. Then they were smoothened and polished with stones or shells, and cut to uniform length. The size of palm-leaf varied from one to three feet long and one to four inches wide and the lines run lengthwise. In South India, Orissa and Ceylon and the Indianised South-East Asia, the characters were inscribed with a pointed stilus on the leaf, and then lamp-back or some colour pigment was rubbed into the inscribed letters. In North India (with the exception of Kashmir) the characters were written on the palm-leaves in ink.* Then leaves were piled one over another, forming a *pothi* (book). Above and below the pile of leaves were placed wooden boards often richly carved or beautifully painted. Hundreds of leaves were secured between the boards. Usually a hole was bored through the leaves and a string was passed through it.†

* *See* Plate 5(*b*), Portion of a *Tada-patra* written in A.D. 1165.
† *See* Plate 6, The *Tada-patras* held together with string.

17. The oldest book of this kind which exists today was found near Tenfan in Sikiang. The book contained a portion of a drama by Aśvaghoṣa. Dr. Luders, who desciphered and edited the drama, thinks that the manuscript belongs to the second century A.D.[76] Another palm-leaf manuscript found by Sir Mark Auriel Stein in the caves of Tunghuang (on the border of China and Sikiang) is assigned to the fourth century A.D. An old Sanskrit palm-leaf MSS. belonging to the sixth century A.D. is preserved in Japan. Its facsimile is kept in the Bodleian Library. The manuscripts of the *Skanda-purāṇa* written on *tāda-patra*, preserved in the Darbar library at Kathmandu, dates to the seventh century.[77] Many later manuscripts written on palm-leaves are found in India. The earliest among them is one discovered by Dr. Kielhorn, which is dated eleventh century A.D. But a portion of an Indian manuscript of sixth century A.D. has been discovered in Japan. Palm-leaf manuscripts of tenth century A.D. are also found in Nepal.

Bhurja-patra : Birch-bark

18. *Bhūrja-patra:* The second important writing material is the inner bark of the Himalayan birch tree (*Baetula bhojpattr*),* referred to as *Bhūrja* in *Amarakoṣa*[78]. The bark of the *Bhūrja* tree is known as *Bhūrja-patra*. The early Greek writer Q. Curtius mentions the Indian practice "The tender side of the barks of trees receives written characters like paper."[79] Kalidas mentions in *Kumārsaṁbhava*, the *Bhūrja-tvacha* 'spotted like the skin of an elephant, and written upon with the solution of metals.'[80] Alberuni states that people in India use the bark of *Bhūrja*, a kind of *tuz* tree.[81] In preparation of the *Bhūrja-patra* it was smoothened and several layers were gummed together to form a leaf. It was also processed before use.

19. *Bhūrja-patra*† was a common material for writing in Northern India especially in Kashmir where the material was easily available. They used to be written upon with a reed pen and specially prepared ink. A few "hoists" of birch-bark manuscripts are found in the relic-caskets of some of the excavated *stūpas* in Afghanistan in the Swat Valley. So also a fragment of *Damma-pada* was found there. Though the dates of these fragments are uncertain they are generally accepted as manuscripts written between the second and the fourth century A.D. But a more authentically dated birch-bark manuscript was found by Sir Mark Auriel Stien at Khadalika in Khotan (Sikiang). It is a medical treatise with

* *See* Plate 7, Himalayan Birch tree. † *See* Plate 8, Skin of Bürja tree before processing.

which was also found the manuscript of *Saṃyaktakāgama*, both belonging to the latter half of the fourth century A.D. The leaves of the books were in oblong shape according to the size and shape of palm-leaves with string-holes in the middle. On *Bhūrja-patra*, unlike the palm-leaf, the line run across the leaf. In many cases the *Bhūrja-patra* was cut in the palm-leaf shape. Alberuni records the method of preparation of *Bhūrja-patra* : " They take a piece one yard long and as broad as the outstretched fingers of the hand, or somewhat less, and prepare it in various ways. They oil and polish it so as to make it hard and smooth, and then they write on it. The proper order of the single leaves is marked by numbers. The whole book is wrapped up in a piece of cloth and fastened between two tablets of the same size. Such a book is called *Puthī*."[81] Later birch-bark manuscripts consisted of folio-size sheets which were folded in the middle and stitched together.

Wood, Bamboo, Bricks and Clay Tablets

20. *Wood* or bamboo was also used to write brief letters, orders and such other documents. On these, the characters were either inscribed or written with ink. Wooden boards were in wide use in ancient India.[82] Kātyāyana refers to plaints written on boards with *pāndu lekha*, i.e. chalk. *Phalaka* was used by the students for learning to write alphabets. In a sculpture preserved at Peshawar the Bodhisattva is shown seated with a writing board* in his lap.[83] Another sculpture preserved at the Lahore Museum the Bodhisattva is shown standing in front of the teacher Viśvāmitra who holds a writing board on which some Kharoshthi letters are visible.[84] Bamboo chips, *salākā*, with markings were in use as passports. Dr. Burnell mentions *Pāndu lekha* (plaints) entered on boards with chalk.[85] *Daśakumāra Charita* refers to a piece of varnished wood, on which Apaharavarman wrote his declaration addressed to his lady-love.[86] An inscription of Kshatrapa Nahapāna refers to the *phalaka* in the guildhall on which loan agreements were carved.[87] A large collection of such documents dating to the fourth century A.D. was found by Stein in the excavation of the ancient Buddhist *vihāras* and caves in Chinese Turkistan, which is modern Sikiang.

Bricks were rarely used in India as writing material. Most of the bricks were stamped with hard material or scratched and then dried before baking. Similar inscriptions have been found on earthen-wares and earthen seals. Clay tablets, dried, and sometimes fired in a kiln, were inscribed with monumental documents. But in general, this material

*See Plate 11d, Writing Board in Peshawar sculpture.

was rarely used in India. It was however normal material for all kinds of documents in the Tigris and Euphratis Valleys. Though was not favoured in India, a few inscribed tablets are found by Dr. Hacy.

Tamra-patra : Copper-plate

21. *Copper* was the widely used metal as writing material in ancient and medieval India. Brass, bronze and tin were seldom used. Fahian (A.D. 400) records[88] the existence of copper-plates in the monasteries which date to the Buddhist time. The sacred books of the Buddhist faith were got engraved on copper-plates by King Kanishka.[89] The copper-plates were known as *Tāmra-pata* or *Tāmra-patra*. They were in very common use for grant-deeds in India, till the introduction of paper in the twelth century. Title deeds of land donated were mostly inscribed on copper and presented to the donee. One of the earliest copper-plates, the Sohgura Copper-plate, dates back to the Mauryan Period.* The Sohgura Copper-plate is a casting made from sand mould in which letters and emblems were scratched with stilus. Most of the Copper-plates found are engraved or stamped with hard material. When the document was lengthy, more than one plate was used and held together with copper rings.† The copper-plates were prepared either by hammering them to the size required or by casting. The matter was then written with ink and then the coppersmith engraved the letters or incised them with a chisel. Sometimes the letters were inscribed with a punch in the form of dotted lines.

Use of Cotton Cloth for Writing

22. Cotton cloth was used here during Alexander's invasion of India.[90] This material is identified as *Kārpāsika-pata*. Manuscripts of *Dharmavidhi* of Sriprabhāsura, discovered by Peterson at Anhilvad, Patan, dates back to A.D. 1361. The manuscript contains ninety-three leaves, thirteen inches wide. Cloth used to be prepared for writing by sizing with wheat or rice pulp and polishing with conch-shell after drying the same. Writing on the *pata* was done with black ink. Use of dyes and cereal paste was also in practice. The earliest extant MSS. on *pata* is of the fourteenth century. Bühler, however, mentions silk bands on which a list of Jain Sūtras were written with ink. Processed cloth known as *Kadatam* was in use in Karnatak till the last century. It used to be sized with tamarind seed powder and then blackened with charcoal. Chalk was used for writing on this black cloth.

* *See* Chapter II, Plate 21*a*, Sohgura Copper-plate.
† *See* Plate 9, A copper-plate with metal ring.

Manufacture of Paper in Ancient India

23. It has been suggested, in support of the existence of writing in ancient India, that the art of manufacture of paper was known to the Indians at least in the fourth century B.C., if not earlier. Max Müller states that "Nearchos... ascribes to the Indians the art of making paper from cotton."[91] This statement of Max Müller has been copied by many scholars including Ojha who rejected Bühler's interpretation of the original reference.[92] I have also quoted it in my Marathi book *Paper-Manufacture*.[93] Howsoever we may wish it to be true, it is not supported by the Greek writers who have quoted Nearchos. Max Müller's assumption appears to have been based on the reference to writing found in Strabo, which reads "They (Indians) write letters, he (Nearchos) says, upon cloth, which has been very closely woven but the other writers affirm that they do not employ written characters. They use copper which has been fused but not wrought ".[94] Readers will note that the writing material referred to here is not paper, but "cloth which was well pressed to make it smooth" as stated by M'crindle in his foot note[95] to the statement of Q. Curtius Rufus, who has mentioned writing material then in use as "the tender side of the barks of trees receive written characters like paper ".[96] Q. Curtius adds "The soil produces flax from which the dress ordinarily worn by the natives is made."[97]

Use of Paper for Writing in India

24. *Paper* came into use in China at the beginning of the second century A.D. Paper was not in wide use in India till the eleventh century. The earliest reference to paper is by King Bhoja of Dhara in Central India. It dates to the eleventh century. (Gough's Papers, 16.) The oldest known example of paper MSS. written in Sanskrit in India is from Gujarat and dates to the beginning of the thirteenth century. Paper MSS. have, however, been found at Kashgar and Kugier, which are written in the Gupta Script in the fifth century A.D.[98] The paper used for these MSS. is coated with gypsum. Ojha states that there were indigenous paper factories much before the introduction of mill-made paper in India.[99] Paper leaves used to be cut and treated in imitation of the palm-leaf or birch-bark, which was the common writing material before paper came into use. Even a late writer like Raja-Sekhara in the tenth century A.D. mentions poets' stock-in-trade as chalk, board, palm-leaves or birch-bark and pen and ink.[100]

Writing Aids : Ink and Pen

25. *Inks* : The birch-bark and palm-leaves were written upon with ink like cloth, paper and leather. Masi is mentioned in the *Gṛhya-sūtra*. It is derived from the word *mas* which means powder. It was in use in India before the fourth century B.C. Ink was made from pulverised charcoal mixed with gum, sugar and water. Permanent inks were prepared with borax, lodhra, and lamp black made from seasam oil. Red dyes were made from *alaktaka* or *hingula*. Green, yellow were also employed. Gold and silver inks were used in writing the illuminated manuscripts.

Pen made of reed or wood and brush made of fibre and hairs are known as *Lekhani*. The reed pen is also known as Kalama (Greek *Kalamos*). A stilus was used in the south to scratch on the palm-leaf. The characters were subsequently blackened with charcoal or black soot. *Varnika* is used to denote a wooden stick used by children to write on the writing board. *Varna Vartika* denotes coloured pencils. Brush was known as *Tuli* or *Tulika*. The word *Śalākā* was used to mean engraver's tool.

Annexure A

LALITA-VISTARA ON INDIAN SCRIPTS[11]

लिपिशालासंदर्शनपरिवर्तो दशमः ।

इति हि भिक्षवः सवृद्धः कुमारः । तदा माङ्गल्यशतसहस्रैः लिपिशालामुपनीयते स्म दशभिर्दारकसहस्रैः परिवृतः पुरस्कृतः, दशभिश्च रथसहस्रैः खादनीयभोजनीयस्वादनीय-परिपूर्णैर्हिरण्यसुवर्णपरिपूर्णैश्च । येन कपिलवस्तुनि महानगरे वीथिचत्वररथ्यान्तरापण-मुखेष्वभ्यवकीर्यते स्म अभिविश्राम्यन्ते। अष्टाभिश्च तुर्यशतसहस्रैः प्रघुष्यमाणैर्महता च पुष्पवर्षेणाभिप्रवर्षता वितर्दिनिर्यूहतोरणगवाक्षहर्म्यकूटागारप्रासादतलेषु कन्याशतसहस्राणि सर्वालंकारभूषिताः स्थिता अभूवन् । बोधिसत्वं प्रेक्षमाणाः कुसुमानि च क्षिपन्ति स्म । अष्टौ च मरुत्कन्यासहस्राणि विगलितालंकाराभरणालंकृतानि रत्नभद्रंकरेण गृहीतानि मार्गं शोधयन्त्यो बोधिसत्त्वस्य पुरतो गच्छन्ति स्म । देवनागयक्षगन्धर्वासुरगरुडकिन्नर-महोरगाश्चार्धकायिका गगनतलात्पुष्पपट्टदामान्यभिप्रलम्बयन्ति स्म। सर्वे च शाक्यगणाः शुद्धोदनं राजानं पुरस्कृत्य बोधिसत्त्वस्य पुरतो गच्छन्ति स्म । अनेनैवंरूपेण व्युहेन बोधिसत्वो लिपिशालामुपनीयते स्म ॥

समनन्तरप्रवेशितश्च बोधिसत्त्वो लिपिशालाम्। अथ विश्वामित्रो नाम दारकाचार्यो बोधिसत्त्वस्य श्रिय तेजश्चासहमानो धरणीतले निविष्टोऽधोमुखः प्रपतति स्म। तं तथा प्रपतितं दृष्ट्वा शुभाङ्गो नाम तुषितकायिको देवपुत्रो दक्षिणेन करतलेन परिगृह्योत्थापयति स्म। उत्थाप्य च गगनतलस्थो राजानं शुद्धोदनं तं च महान्तं जनकायं गाथाभिरभ्यभाषत्—

शास्त्राणि यानि प्रचलन्ति मनुष्यलोके । संख्या लिपिश्च गणनापि च धातुतन्त्रम् ।
ये शिल्पयोग पृथु लौकिक अप्रमेयाः । तेष्वेषु शिक्षितु पुरा बहुकल्पकोट्यः ॥ १ ॥
किं तू जनस्य अनुवर्दनतां करोति । लिपिशालमागतु सुशिक्षितु शिष्यणार्थम् ।
परिपाचनार्थं बहुदारक अग्रयाने । अन्यांश्च सत्त्वनयुतानमृते विनेतुम् ॥ २ ॥
लोकोत्तरेषु चतुसत्यपथे विधिज्ञो । हेतुप्रतीत्यकुशलो यथ संभवन्ति ।
यथ जानिरोधक्षयु संस्थितु शीतिभावः । तस्मिन्विधिज्ञ किमथो लिपिशास्त्रमात्रे ॥ ३ ॥
नेतस्य आचरिय उत्तरि वा त्रिलोके । सर्वेषु देवमनुजेष्वयमेव जेष्ठः ।
नामापि तेष लिपिनां न हि वित्थ यूयं । यत्रेषु शिक्षितु पुरा बहुकल्पकोट्यः ॥ ४ ॥
सो चित्तधार जगतां विविधा विचित्रा । एकक्षणेन अयु जानति शुद्धसत्त्वः ।
अदृश्यरूपरहितस्य गतिं च वेत्ति । किं वा पुनोऽथ लिपिनोऽक्षरदृश्यरूपाम् ॥ ५ ॥

इत्युक्त्वा स देवपुत्रो बोधिसत्त्वं दिव्यैः कुसुमैरभ्यर्च्य तत्रैवान्तर्दधे। तत्र धात्र्यश्च चेटीवर्गाश्च स्थापिता अभूवन्। परिशेषाः शाक्याः शुद्धोदनप्रमुखाः प्रक्रामन्तः॥

अथ बोधिसत्त्व उरगसारचन्दनमयं लिपिफलकमादाय दिव्यार्षसुवर्णतिरकं समन्तान्मणिरत्नप्रत्युप्तं विश्वामित्रमाचार्यमेवमाह—कतमां मे भो उपाध्याय लिपिं शिक्षापयसि। ब्राह्मीखरोष्टीपुष्करसारिं अङ्गलिपिं वङ्गलिपिं मगधलिपिं मङ्गल्यलिपिं अङ्गुलीयलिपिं शकारिलिपिं ब्रह्मवलिलिपिं पारुष्यलिपिं द्राविडलिपिं किरातलिपिं दाक्षिण्यलिपिं उग्रलिपिं सख्यालिपिं अनुलोमलिपिं अवंमूर्धलिपिं दरदलिपिं खाष्यलिपिं चीनलिपिं लूनलिपिं हूणलिपिं मध्याक्षरविस्तरलिपिं पुष्पलिपिं देवलिपिं नागलिपिं यक्षलिपिं गन्धर्वलिपिं किन्नरलिपिं महोरगलिपिं असुरलिपिं गरुडलिपिं मृगचक्रलिपिं वायसरुतलिपिं भौमदेवलिपिं अन्तरीक्षदेवलिपिं उत्तरकुरुद्वीपलिपिं अपरगोडानीलिपिं पूर्वविदेहलिपिं उत्क्षेपलिपिं निक्षेपलिपिं विक्षेपलिपिं प्रक्षेपलिपिं सागरलिपिं वज्रलिपिं लेखप्रतिलेखलिपिं अनुद्रुतलिपिं शास्त्रावर्तां गणनावर्तलिपिं उत्क्षेपावर्तलिपिं निक्षेपावर्तलिपिं पादलिखितलिपिं द्विरुत्तरपदसंधिलिपिं यावद्दशोत्तरपदसंधिलिपिं मध्याहारिणीलिपिं सर्वरुतसंग्रहणीलिपिं विद्यानुलोमाविमिश्रितलिपिं ऋषितपस्तप्तां रोचमानां धरणीप्रेक्षिणीलिपिं गगनप्रेक्षिणीलिपिं सर्वौषधिनिष्यन्दां सर्वसारसंग्रहणीं सर्वभूतरुतग्रहणीम्। आसां भो उपाध्याय चतुष्षष्ठीलिपीनां कतमां त्वं शिष्यापयिष्यसि?

अथ विश्वामित्रो दारकाचार्यो विस्मितः प्रहसितवदनो निहतमानमददर्प इमां गाथामभाषत—

आश्चर्यं शुद्धसत्त्वस्य लोके लोकानुवर्तिनो। शिक्षितः सर्वशास्त्रेषु लिपिशालामुपागतः॥ ६॥
येषामहं नामधेयं लिपीनां न प्रजानमि। तत्रैष शिक्षितः सन्तो लिपिशालामुपागतः॥ ७॥
वक्त्रं चास्य न पश्यामि मूर्धानं तस्य नैव च। शिष्ययिष्ये कथं ह्येनं लिपिप्रज्ञाय पारगम्॥ ८॥
देवदेवो ह्यतिदेवः सर्वदेवोत्तमो विभुः। असमश्च विशिष्टश्च लोकेष्वप्रतिपुद्गलः॥ ९॥
अस्यैव त्वनुभावेन प्रज्ञोपाये विशेषतः। शिक्षितं शिष्ययिष्यामि सर्वलोकपरायणम्॥ १०॥

इति हि भिक्षवो दश दारकसहस्राणि बोधिसत्त्वेन सार्धं लिपिं शिष्यन्ते स्म। तत्र बोधिसत्त्वाधिस्थानेन तेषां दारकाणां मातृकां वाचयतां यदा अकारं परिकीर्तयन्ति स्म, तदा अनित्यः सर्वसंस्कारशब्दो निश्चरति स्म। आकारे परिकीर्त्यमाने आत्मपरहितशब्दो निश्चरति स्म। इकारे इन्द्रियवैकल्यशब्दः। ईकारे ईतिबहुलं जगदिति। उकारे उपद्रवबहुल जगदिति। ऊकारे ऊनसत्त्वं जगदिति। एकारे एषणासमुत्थानदोषशब्दः। ऐकारे ऐर्यापथः श्रेयानिति। ओकारे ओघोत्तरशब्दः। औकारे औपपादुकशब्दः।

अंकारे अमोघोत्पत्तिशब्दः। अःकारे अस्तंगमनशब्दो निश्चरति स्म। ककारे कर्मविपाकावतारशब्दः। खकारे खसमसर्वधर्मशब्दः। गकारे गम्भीरधर्मप्रतीत्यसमुत्पादावतारशब्दः। घकारे घनपटलाविद्यामोहान्धकारविधमनशब्दः। ङकारेऽङ्गविशुद्धिशब्दः। चकारे चतुरार्यसत्यशब्दः। छकारे छन्दरागप्रहाणशब्दः। जकारे जरामरणसमतिक्रमणशब्दः। झकारे झषध्वजबलनिग्रहणशब्दः। ञकारे ज्ञापनशब्दः। टकारे पटोपच्छेदनशब्दः। ठकारे ठपनीयप्रश्नशब्दः। डकारे डमरमारनिग्रहणशब्दः। ढकारे मीढविषया इति। णकारे रेणुक्लेशा इति। तकारे तथतासंभेदशब्दः। थकारे थामबलवेगवैशारद्यशब्दः। दकारे दानदमसंयमसौरभ्यशब्दः। धकारे धनमार्याणां सप्तविधमिति। नकारे नामरूपपरिज्ञाशब्दः। पकारे परमार्थशब्दः। फकारे फलप्राप्तिसाक्षात्क्रियाशब्दः। बकारे बन्धनमोक्षशब्दः। भकारे भवविभवशब्दः। मकारे मदमानोपशमनशब्दः। यकारे यथावद्धर्मप्रतिवेधशब्दः। रकारे रत्यरतिपरमार्थरतिशब्दः। लकारे लताछेदनशब्दः। वकारे वरयानशब्दः। शकारे शमथविपश्यनाशब्दः। षकारे षडायतननिग्रहणाभिज्ञज्ञानावाप्तिशब्दः। सकारे सर्वज्ञज्ञानाभिसंबोधनशब्दः। हकारे हतक्लेशविरागशब्दः। क्षकारे परिकीर्त्यमाने क्षणपर्यन्ताभिलाप्यसर्वधर्मशब्दो निश्चरति स्म॥

इति हि भिक्षवस्तेषां दारकाणां मातृकां वाचयतां बोधिसत्वानुभावेनैव प्रमुखान्यसंख्येयानि धर्ममुखशतसहस्त्राणि निश्चरन्ति स्म॥

तदानुपूर्वेण बोधिसत्त्वेन लिपिशालास्थितेन द्वात्रिंशद्दारकसहस्त्राणि परिपाचितान्यभूवन्। अनुत्तरायां सम्यक्संबोधौ चित्तान्युत्पादितानि द्वात्रिंशद्दारिकासहस्त्राणि। अयं हेतुरयं प्रत्ययो यच्छिक्षितोऽपि बोधिसत्त्वो लिपिशालामुपागच्छति स्म॥

॥ इति श्रीललितविस्तरे लिपिशालासंदर्शनपरिवर्तो नाम दशमोऽध्यायः॥

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   (*ii*) भ्रान्ते: पुरुषधर्मत्वाल्लेख्यं निर्णायकं परम् ॥ II. 291.
   अनुभूतस्य स्मृत्यर्थं लिखितं निर्मितं पुरा ।
   यत्नाच्च ब्रह्मणा वाचा वर्णस्वरविचिह्नितम् ॥ II. 297. *Śukranītisāra. Ibid,* p. 3.
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16. काव्यस्य लेखनार्थाय गणेश: स्मर्यतां मुने । *Mahābhārat, Ādiparva* I-74.
17. वेदविक्रयिणश्चैव वेदानां चैव दूषक: । वेदानां लेखकाश्चैव ते वै निरयगामिन: *Mahābhārata, Anusāsana Parva,* 63.28.

18. वृत्तचौलकर्मा लिपिं संख्यानं चोपयुञ्जीत । I.5.2; संज्ञालिपिभिश्चारसञ्चारं कुर्युः । I.12.8; पञ्चमे मन्त्रिपरिषदा पत्रसम्प्रेषणेन मंत्रयेत । I.19.6; आमात्य सम्पदोपेतः सर्वसमयविदाशुग्रन्थश्चार्वक्षरो लेखवाचनसमर्थो लेखकः स्यात् । II.10.28. *Arthasāstra of Kautilya.*

19. पुस्तकेषु च या विद्या । परहस्तेषु यद् धनम् ॥ समुत्पन्नेषु कार्येषु । न सा विद्या न तद् धनम् ॥ ३ ॥ *Chāṇākya* V. 3. *Chāṇākya-Nīti*--Translation by Ludwik Sternbach, Vishveshvaranand Vedic Research Institute, Hoshiarpur, 1964.

20. ' उत त्वः पश्यन्न ददर्श वाचमुतत्वः श्रुण्वन्न शृणोत्येनां *Ṛg-veda*, X. 6.71.4.

21. ' चतुरश्रिद्दमानाद्बिभीयादा निधातोः न दुरुक्ताय स्पृहयेत् ॥ ' *Ṛg-veda*, I.8.41.9.

22. (*i*) तद्वैतत्पंश्य न्नृषिर्वामदेवः प्रतिपदे । अहं मनुरभवं सूर्यश्चति । *Śatapatha* XIV, 4-2-22.
(*ii*) तदेतदृषिः पश्यन्नभ्यनुवाच नियुत्वाँ इन्द्रसारथिरितिः *Aitareya* 9-1.

23. (*i*) सहस्रं मे ददतो अष्टकर्ण्यः श्रवो देवेष्वक्रत ॥, *Ṛg-veda* 10.5.62.7;
(*ii*) लोहितेन स्वाधितिना मिथुनं कर्णयोः कृधि । अकर्तामिश्विना लक्ष्य तदस्तु प्रजया बहु ॥ २ ॥ यथा चक्रुर्देवासुरा यथा मनुष्याऽउत । एवा सहस्रपोषाय कृणुतं लक्ष्मश्विना ॥ ३ ॥ *Atharva* VI. 141.2.3;
(*iii*) यो अस्याः कर्णा वास्कुनोत्या स देवेषु वृश्चते । लक्ष्म कुर्व इति मन्यते कनीयः कुणुते स्वम् ॥ *Atharva*, XII-4-6 ; and *Maitrāyaṇi-Samhita*, IV-2-9.

24. (*i*) कर्णो वर्ण-लक्षणात् । *Panini* VI.2.112
(*ii*) **कर्णे लक्षणस्या**विष्टाष्टपञ्चमणिभिन्नाच्छिन्नाच्छिद्रस्रुवस्वस्तिकस्य ॥ VI.3.115
" Before कर्ण there is the substitution of a long vowel for final of the preceding word, when it denotes a **proprietorship mark on the ears** of cattle, but not when the words are विष्ट, अष्टन्, पञ्चन्, मणि, भिन्न, छिन्न, छिद्र, स्रुव and स्वस्तिक ॥ " Shri Chandra Vasu, Panini Office, Benaras 1897, p. 1243.

25. (*i*) महान् व्रीह्यपराह्णगृष्टीष्वासजाबालभारभारतहैलिहिलरौरवप्रवृद्धेषु ॥ VI.2.38.
The word महत् (महा) retains its accent before the following : व्रीहि, अपराह्ण, गृष्टि, इष्वास, जाबाल, भार, भारत, हैलिहिल, रौरव and प्रवृद्ध ॥ *Ibid*, pp. 1153-54.
(ii) अधिकृत्यकृते **ग्रन्थे** । IV.3.87. An affix comes after a word in the second case in construction in the sense of ' made in relation to any subject' when the thing made is a Book. *Panini* IV. 3.87 *Ibid*, p. 779

26. ग्रामण्य **गणक**मभिक्रोशकं तान्महसे ॥ *Yājur-veda, Vājasaneyi Samhita* XXX-20.

27. अग्र नयत्सुपद्यक्षराणामच्छा प्रथमा जानती गात् । *Yajur-veda* 33;59
अक्षराणां अकारादीनां रवं जानती प्रथमा अगात् गच्छतिः । Commentator Uvvat.

28. ' सांलिखित मजेषमुत संरुधम् ' *Atharva-veda* VII.50.5. Bloomfield translates " I have conquered and cleaned thee out. I have conquered thy reserve " The word सांलिखित however definitly indicates records of the winnings—*Author.*

29. ' यस्मात्कोशादुदभराम वेदं । तस्मिन्नतः अवदध्म एनम् ' *Atharva-veda* XIX-72-1. (As we have accomplished our rituals so we keep the Veda in the same box, out of which we took it.)

30. यद्यदुतमं लिखितमर्णेन *Atharva-veda* XII.3.22.

31. दश च वै सहस्राण्यष्टौ च शतानि । सँव्वत्सरस्य मुहूर्त्ता यावन्तो मुहूर्त्तास्तावन्ति पञ्चदश क्रत्व शिप्राणि यावन्ति क्षिप्राणि तावन्ति पञ्चदश क्रत्वऽएतहींणि यावन्त्ये तहींणि तावन्ति पञ्चदशक्रत्व इशनि नि यावन्ति दानीनि तावन्तः पञ्चदश क्रत्वः प्राणा यावन्तः प्राणास्तावन्तोऽना यावन्तोऽ नास्तावन्तो निमेषा यावन्तोनिमेषास्तावन्तो लोमगर्त्ता यावन्तो लोमगर्त्तास्तावन्ति स्वेदायनानि यावन्ति स्वेदायनानि तावन्तऽएते स्तोकाघर्षन्ति ॥ *Śātapatha Brāhmaṇa* XII.3.2.5.

32. अक्षर पंक्तिः छंदः *Śatapatha Brāhmaṇa*, X.4.2.22-25.

33. शीक्षाव्याख्यास्यामः । वर्णः स्वरः । मात्रा बलम् । साम संतानः । इत्युक्तः शीक्षाध्यायः ॥*Taittarīya* 1-1
The Secrad Books of the Hindus, Edited by Major B. D. Basu (IMS): Allahabad, Vol. XXX, Part 2, p. 2.

34. गायत्रेण प्रति मिमीते अर्कमर्केण साम त्रैष्टुभेन वाकं । वाकेन वाकं द्विपदा चतुष्पदाक्षरेण मिमते सप्तवाणीः I.164.24.
[He constructs the prayer with the *Gayatri* metre with the prayer (he constructs) the same and with the *Trishtubh* metre the couplet (or triplet) with the couplet (or trible) he constructs the hymn with (verses of) two or four distrchs and with the syllable they construct the seven metres. I.164.24.]
अचो अक्षरे परमे व्योमन्य स्मिन्देवा अधि विश्वे निषेदुः । यस्तन्न वेद किमृचा करिण्यति य इत्तद्विदुस्त इमे समासते I.164.39.
[All the gods have taken their seats upon this supreme heaven, the imperishable (text) of the Veda what will he, who knows not this, do with the Veda. But they who do know it they are perfect. I.164.39.]

35. (*i*) अथ खल्वात्मसंमितमति मृत्यु सप्राविधꣳ सामोपसीत हिंकार इति त्र्यक्षरं प्रस्ताव इति त्र्यक्षरं तत्समम् ॥ *Chhāndogya* II.10.
(*ii*) मित्येतदक्षरमुद्गीथमुपासीत । *Chhāndogya* I·1.
(*iii*) अथ खलु य उद्गीथः स प्रणवो यः प्रणवः स उद्गीथ । *Chhāndogya* I.5.

36. *Viṣnu Dharmasūtra*, VI.23, *Vaśiṣtha Dharmasūtra*, XVI.10,14,15 ; The Saered Books of the East Series. Vol. XIV, *The Sacred Laws of the Āryas*, Tr. Georg Bhüler, Oxford, 1882, pp. 80-81.

37. ' यास्कादिभ्यो गोत्रे ' *Panini*, II-4-63, p. 336.

38. " यदि उस समय लिखना या लिखित ग्रंथ न थे तो क्या पाणिनी और यास्क इन सब आचार्यों के ग्रंथो को वेद के सूक्तों की तरह कंठस्थ करनेवालों को सामने बिठाकर उसके मत सुनते गये होंगे और अपना निबंध बनाकर स्वयं रटते और शिष्यों को रटाते गये होंगे ? Pandit Gaurishankar Hirachand, Ojha, *The Palaeography of India*, Ajmer, 2nd Edition, 1918, p. 8, foot-note 15.

39. (*i*) तस्य यानि व्यञ्जनानि तच्छरीरं यो घोषः स आत्मा य ऊष्माणः स प्राणः । ...ए तस्य, बृहतसिहस्रस्य सपंन्नस्य षट्त्रिंशतमक्षराणां सहस्राणि भवन्ति तावन्ति शतसंवत्सरस्यान्हां सहस्राणि भवन्ति व्यञ्जनैरेव रात्रीरान्पुवन्ति स्वरैरहानि । *Aitareya Āraṇyaka*, II-2.4. Translation by Arthur Berriedale Keith, Oxford Clarendon Press, London, 1909, pp. 214-5.

(*ii*) पूर्वमक्षरं पूर्वरुपमुत्तरमुत्तररूपं योऽवकाश: पूर्वरूपोत्तररूपे अन्तरेण सा सहितेति । · · पूर्वमेवाक्षरं पूर्वरूपमुत्तररूपं योऽवकाश: पूर्वरूपोत्तररूपे अन्तरेण येन संधिं विवर्तयति येन स्वरास्वरं विजानाति येन मात्रामात्रां विभजते सा संहितेति । *Aitareya Āranyaka* III-1-5. *Ibid*, p. 243.

(*iii*) तस्यैतस्यात्मन: प्राण ऊष्मरूपमस्थीनि स्पर्शरूपं मज्जान: स्व-रूपं मासं लोहितमित्येतदन्यच्च तुर्थमन्तस्थारूपमितिह स्माह ह्रस्वो माण्डूकेय : *Aitareya Āraṇyaka* III-1-5. *Ibid*, p. 243.

(*iv*) पृथिव्या रुपं स्पर्शा अन्तरिक्षस्योष्माणो दिव: स्वरा: । अग्ने रुपं स्पर्शा वायोरूष्माण आदित्यस्य स्वरा: । ऋग्वेदस्य रुपं स्पर्शा यजुर्वेदस्योष्माण: सामवेदस्य स्वरा : । चक्षुषो रुपं स्पर्शा: श्रोत्रस्योष्माणो मनस: स्वरा: । प्राणस्य रुपं स्पर्शा: अपानस्योष्माणोव्यानस्य स्वरा: । अथ खल्वियं दैवी वीणा भवति तदनुकृतिरसौ मानुषी वीणा भवति । .....अथातो वाग्रसो यस्यां संसचधीयानो वा भाषमाणोवा न विरुखचिषेत तत्रैतामृचं जपेत् । ओष्ठापिधाना नकुली दन्तै: परिवृता पवि: । सर्वस्यै वाच इशाना चारु मामिह वादयेत् । इति वाग्रस : *Aitareya Āraṇyaka*, III-2.5. *Ibid*, pp. 254-5.

(*v*) तस्यै वा एतस्यै संहितायै णकारौ बलं षकार: प्राण आत्मा । स यो है तौ णकारषकारावनु संहितमृचो वेद सबलां सप्राणां सहितां वेदायुष्य मिति विद्यात् । स यदि विचिकित्सेत्सणकारं ब्रवाणी३ आणकारा३ इति सणकार मेव ब्रूयात्सषकारं ब्रवाणी३ अषकारा३ इति सषकारमव ब्रूयात् । ... *Aitareya Āraṇyaka*, III-2.6. *Ibid*, p. 256.

40. तेभ्योऽमित प्रेभ्यखयो **वर्णा** अजायन्ता कार: **उकारो मकार** इति तान केधा समभरत्तदेत दोइँभिति *Aitareya Brāhmaṇa.*

41. अयं वाव लोको हाऊकारो वायुहाइकारश्चन्द्रमा अथकार: । आत्मेहकारोऽग्निरीकार: ॥ १ ॥ आदित्य उकारो निहव एकारो विश्वेदेवा औहोयिकार: तजापति हिंकार: प्राण: स्वरोऽन्न या वाग्विराट् ॥ २ ॥ अनिरुक्त खयोदश: स्तोभ: संचरो हुंकार: ॥ ३ ॥ दुग्धेऽस्मै वाग्दोहं यो वाचो दोहोऽन्नवानन्नादो भवति य एतामेव ५ साम्नामुपनिषदं वेदोपनिषदं वेद ॥ ४ ॥ *Chhāndogya* I.13.

42. पुस्तक वाचनम् । य: कश्चित्पुस्तक: । दैवसिकायव्यय पिण्डीकरणम् । *Kāmasāstra.*

43. Winternitz, M. *A History of Indian Literature*, Vol. I, Part I, Translated by S. Ketkar, 2nd Edition, Calcutta, 1959, p. 29.

44. Rhys Davids, T. W. *Dialogues of the Buddha*, Vol. I, pp. 3-26; *see* also *Brahmajāla Sūtta* 14 ; *Samanna Phala Sūtta* 49 ; *Cullavagga* I.13.2.

45. *Suttanta*, I.1.

46. *Bhikkhu Pachittiya*, 2.2.

47. *Vinaya-Pitika*, i. 77 ; iv, 128. Rhys Davids, T. W., *Buddhist India*, The Story of the Nations Series, London, 1903, p. 108.

48. *Vinaya-Pitika* iii-76, *Ibid*, p. 108-9 (*See* also George Bühler, *Indian Palaeography*, Bombay, 1904, p. 5.)

49. *Rura-Jātaka* ; *The Jātaka or Stories of the Buddha's Former Births*, Edited by Prof. E. B. Cowell, Vol. IV, Cambridge, 1901, Book XIII, No. 482, p. 161.

50. विनिच्छय धम्म, *Tekuna Jātaka.*

51. *Kaṇha-Jātaka*, *The Jātak etc.*, Vol. IV, p. 5.

52. अनेनैवंरूपेण व्यूहेन बोधिसत्वो लिपिशालामुपनीयते स्म । *Lalita-vistara* X, *see* Annexure A, p. 17.

53. ततो लेखरुपगणनाववहार विधि विसारदेन सवविजा वदातेन नववसाानि योवराजे पसासितं ॥ *Hāthigumpha and Three Other Inscriptions*, Edited by Bhagavanlal Indraji, p. 22.

54. (*i*) *Mahāvagga*, 1.49 1.2. *Vinaya Texts*, Part I, Tr. T. W. Rhys Davids and Hermann Oldenberg *The Sacred Books of the East* ; Ed. F. Max Müller, Vol. XIII, Oxford, 1881, p. 201;
(*ii*) *Bhikku Pachittiya*, 65.1.

55. *Mahavagga*, 1.43. *Vinaya Texts*, Part I, *The Sacred Books of the East*, Vol. XIII, p. 198.

56. *Indica of Megasthenes*, 91.125-126 ; C. Müller, *Fragments of History of Greaece*, p. 421.

57. Strabo XV. i. 53. Fragm. XXVII "Of the Manners of the Indians" *Ancient India as described by Megasthenes and Arrian* (being a translation of the fragments of the *Indica of Megasthenes* collected by Dr. Schwanbeck and of the first part of *Indica of Arrian*, by J. W. McCrindle, London, 1877, p. 69.

58. Strabo XV. 1. 39. Fragm. XXXIII Of the " Seven Castes among the Indians." *Ibid*, p. 83.

59. Goldstücker, Theodor, *Panini, His Place in Sanskrit Literature*, London, 1861, p. 15.

60. Winternitz, M. (Ph.D.): *A History of Indian Literature*, Vol. I, Part I, Translated by S. Ketkar, 2nd Edition, Calcutta, 1959, pp. 29–30.

61. Goldstüker, Theodor, *Panini etc.*, pp. 18/19 and 24.

62. (*i*) समुदाङभ्यो यमोऽग्रन्थे । I.4.75. (*ii*) अधिकृत्यकृते ग्रन्थे । IV.3.87.
(*iii*) कृते ग्रन्थे । IV.3.116. (*iv*) ग्रन्थान्ता धिके च । VI.3.79.
Panini, Astadhāyi-Sūtrapātha.

63. धार्यतेहि त्वया ग्रन्थ उभयोवर्देशास्त्रयो : । नव ग्रन्थस्य तत्वज्ञो यथा वत्वं नरेश्वर ।
यो हि वेदे च शास्त्रे च ग्रंथ धारण तत्पर: । नच ग्रन्थार्थ तत्वज्ञस्तस्य द्वारण यथा ॥
भारं स वहते तस्य ग्रंथस्यार्थ न वेति य: । यस्तु ग्रन्थार्थतत्वज्ञो नास्य नास्य ग्रन्थागमोवृथा ॥
Mahābhārata, *Śantiparva*, V-11340-11342.

64. यीवर्णयोर्दीधीवेव्यो : ॥५३॥ "The final of दीधी and वेवी falls before an affix beginning with ब, or ई, *Panini*, VII-4.53 ; Shri Chaudra Vasu, p. 1473.

65. Weber Alberecht, *Indishe Studien*, Vol. IV, p. 89.

66. दृष्टं साम, *Panini*, IV. 2.7. *See* also the following references :
अन्येभ्योऽपि दृश्यते III.2.178; अन्येभ्योऽपि दृश्यन्ते III.2.75;
अन्येषामपि दृश्यते VI.3.137; अन्येष्वपि दृश्यते III.2.101;
इतराभ्योऽपि दृश्यन्ते V.3.14; छन्दस्यपि दृश्यते VI.4.73.

67. (*i*) एव मुच्चानचैर भिप्रायै ऋषीणां मन्त्रदृष्टयो भवन्ति *Nirukta* 73.
(*ii*) ऋषिदर्शनात् । स्तो मान्द दर्शेत्योपमन्य व: *Nirukta* 2.11.

68. अत्रहि ककारेण चिन्द्वेन प्रत्याहारस्थो विवृतो निर्दिष्ट *Kaiyyata.*

69. स ह्याश्रमैर्विजिज्ञास्य: समस्तैरेवमेव तु । द्रष्टव्यस्त्वथ मन्तव्य: । *Yājnavalkya* III.191.

70. *See* also the following references :

(*i*) शौनको...द्वितीय मण्डलं दृष्ट्वा...

(*ii*) ऋषयो मन्त्रद्रष्टार: । Uvata on first verse of *Rk-Prātisakya* (Journal Asiatiques, Tome VII, 1856, p. 181).

(*iii*) यज्ञकाण्ड द्रष्टारऋषय: Nagoji bhatta on Panini 1.1.1.

(*iv*) ऋषिशब्देनाच मन्त्रद्रष्टार: *Ibid*, IV-1-79.

71. Goldstücker. *Panini* etc., p. 61.

72. *Kaṇha-Jātaka, The Jātaka or Stories of the Buddha's Former Births*, Edited by Prof. E. B. Cowell, Vol. IV, Cambridge, 1901 ; Bk. X, No. 440, p. 5.

73. (*i*) ' Taxila Gold-plate ' *Kharoshthi Inscriptions, Corpus Inscriptionum Indicarum*, Vol II, Part-I, Edited by Sten Konow, Calcutta, 1929, pp. 83-86—Plate XVII. (*ii*) *See* also "Minor Taxila Inscriptions", Plate XIX for Silver-plates, Cup and Sieve Inscriptions, *Ibid*, pp. 97-99.

74. " During the rest of the three months, having finished the collection of the Three *Pitakas*, and inscribed them on leaf of the *tada* (the palm-leaf) they then distributed them everywhere for all." Samuel Beal *Life of Huien Tsiang* by the Shamans Hwui Li and Yen-Tsung, London, 1888, p. 11.

75. Takakusu, J. (B.A.) " Pali Elements in Chinese Buddhism, a translation of Buddhaghoṣa's *Samanta-Pāsādikā*, a commentary on the Vinaya found in Chinese *Tripitika, J.R.A.S.* 1896, pp. 415-439; *see* p. 436.

76. Lüders, Von-Heinrich, *Das Sariptra prakarna ein Drama des Asvaghosa* Überreicht Von Verfasser. Sitzungsberichte Der Koniglich Preussischen Akademie Der Wissenchaften. Vol. XVII, 1911.

77. *Catalogue of Palm-leaf and selected Paper MSS belonging to the Darbar Library, Nepal*, Edited by Hara Prasad Shastri, Introduction, p. 52.

78. भूर्जे चार्मिमृदुत्वचो । *Amarakoṣa*, II.4.46.

79. Quintus Cartius Rufus, *History of Alexander the Great, The Invasion of India by Alexander the Great* (as described by Arrian, Q. Curtius, Diodoros, Plutarch and Justin), London, 1896, p. 186.

80. न्यस्ताक्षरा धातुरसेन यत्र भूर्जत्वच : कुञ्जराबिन्दुशोणा : ॥
व्रजन्ति विद्याधरसुन्दरीणामनङ्ग लेख क्रिययोणयोगम् ॥ *Kumāra-Sambhava* I. 7.

81. *Alberuni's India*, Edited by Edward C. Sachau, London, Popular Edition, 1914.

82. Ojha, Rai Bahadur, Pandit Gauri-Shankar Hirachand, *The Palaeography of India* (*Pracina Bharatiya Lipimala*), 2nd Edition, Ajmer, 1918.

83. ' *Hand Book to Sculptures in Peshawar Museum*, Spooner, p. 9.

84. " Lahore Inscription on writing board " (No. 206) *Kharoshthi Inscriptions* Edited by Sten Konow. *Corpus Inscriptionum Indicarum*, Vol. II, Part I, Calcutta, 1929, pp. 130-31, Plate XXIV-2.

85. Burnel, Dr. A. C., *Elements of South Indian Palaeography*, London, 1878, p. 87, note 2.

86. *Daśakumāra Cairita*, Uchhvvāsa II.

87. ' निगमसभाया निबद्ध व फल्कवारे चरित्रतोति भूयो नेनादतम् ' Inscription No. 12, in the "Caves at Nasik " by E. Senart, *Epigraphia Indica*, Vol. VIII, 1905-6, pp. 59-96. Plate V (ksh 9) p. 82 Inscription.

88. Beal, *Si-yu-ki*, I.xxxviii.

89. Burnell, *South Indian Palaeography*, p. 86.

90. Strabo 67, *Ancient India as described in Classical Literature*. Translated by J. W. M'Crindle, London, 1901.

91. Max Müller, *History of Ancient Sanskrit Literature*, p. 517.

92. Ojha, *Prachina Lipimala*, p. 144, footnote 3.

93. Naik B. S., *Kāgada* (*Paper Manufacture*), Poona, 1942.

94. Strabo 67. *See* Ref. 90 above.

95. " Strabo (XV.I. 67.) states on the authority of Nearchos that the Indians wrote letters upon cloth which was well pressed to make it smooth but adds that other writers affirmed that the Indians had no knowledge of writing for some centuries before Alexander's time, but whence they got their alphabet is a question not yet quite settled though the weight of opinion inclines to assign it a Himyaritic origin. We learn from Pliny (xiii-21) that paper made from papyras plant did not come into common use out of Egypt till the time of Alexander the Great. He then goes on to say that for writing on the leaves of palm trees were first used and then the barks (*libri*) of certain trees. Some of the Egyptian papyrus-rolls are as old as the sixth dynasty."

Q. Curtius Rufus, *History of Alexander the Great*. Eighth Book, Chapter IX, " Description of India " *See The Invasion of India by Alexander the Great*, Second edition, Translated by J. W. M'Crindle, London, 1896, p. 186 footnote.

96. *See* Ref. 79.

97. *Ibid*, pp. 185-6.

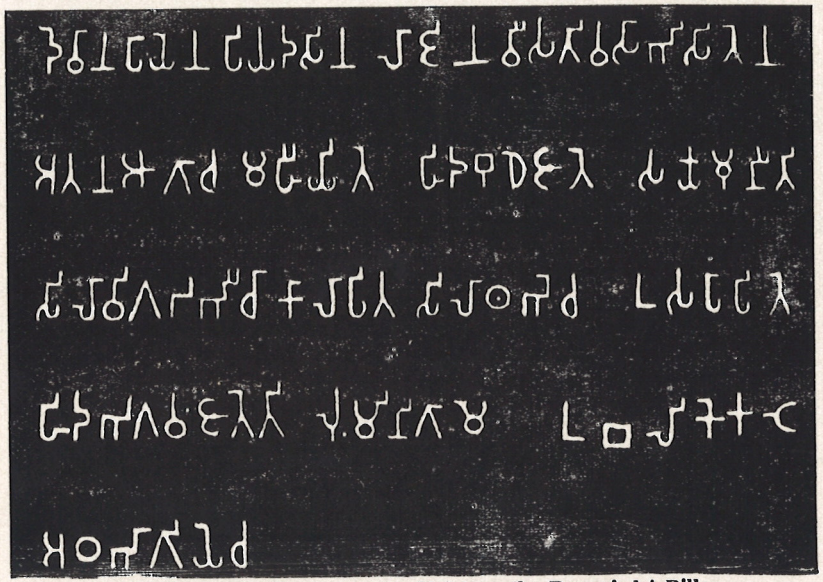
98. Hoernle, A.F. Rudolf, " Three further collections of Ancient MSS from Central Asia ", *J.A.S.B.*, Vol. 66, Part I—1897, p. 215.

99. Ojha, *Prachina Bharatiya Lipimala*, p 144.

100. तस्य सम्पुटिका[1] सफल्क[2] खटिका[3] समुद्गक[4] सलेखनी[5] कमषीभाजनानी[6] ताडिपत्राणि[7] भूर्जत्वचो[8]वा सलोहकण्टकानी[9] ताल्दलानी[10] सुसम्मुष्टाभित्तय:[11] सतत सन्निहिता: स्यु: ॥ दशमोऽध्याय, ' कविचर्या राजचर्याच ' (a box[1]; a board[2]; a chalk[3]; a hammer[4]; pens[5]; ink-pots[6]; palm-leaves[7]; birch-bark[8]; iron nails;[9] leaves of palmtree[10]; well brushed plates[11]) *Kavyamimainsa*, Rajasekhara, Ed. C. D. Dalal and Pt. R. A. Sastry, Baroda, 1934, p. 50.

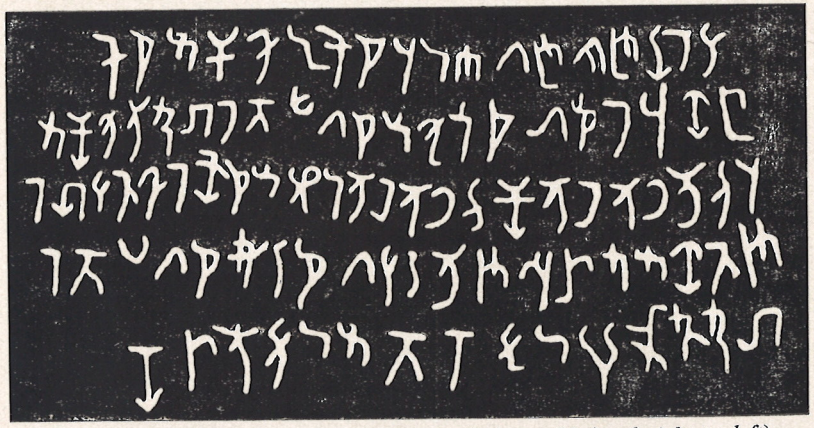
Writing Material used in Ancient India

(Chapter I : Plates 1 to 13)



(a) Brahmi Inscription : Asoka Edict on the Rummindei Pillar

1 Devānaṁpiyena Piyadasina lājina vīsativasābhisitena
2 atana āgāca machīyite hida Budhe jāte Sakyamunīti
3 silāvigaḍabhīcha kālāpita silāṭhabhe cha usapāpite
4 hida Bhagavam jāte ti Luṁminigāme ubalike kaṭe
5 aṭhabhāgiye cha



(b) Kharoshthi Inscription : Rock Edict at Shabazgarhi (*read right to left*)

1 Devanaṁpriyo Priyaśi raja savratra ichhati savra
2 prashaṁda vaseyu save hi te sayame bhavaśudhi cha ichhaṁti
3 jano chu uchavuchachhaṁdo uchavucharago te savraṁ ekadeśaṁ va
4 pi kashaṁti vipule pi chu dane yasa nasti sayama bhava
5 śudhi kitraña ta driḍhabhatita nicha paḍhaṁ

PLATE 1

K	D	J	४	ᒐ	ᒪ
a	*dha*	*pa*	*ma*	*la*	*sa*

2

(a) **Erān Coin** (Fourth century B.C.)

Courtesy : Dr. Sarkar, *Select Inscriptions*

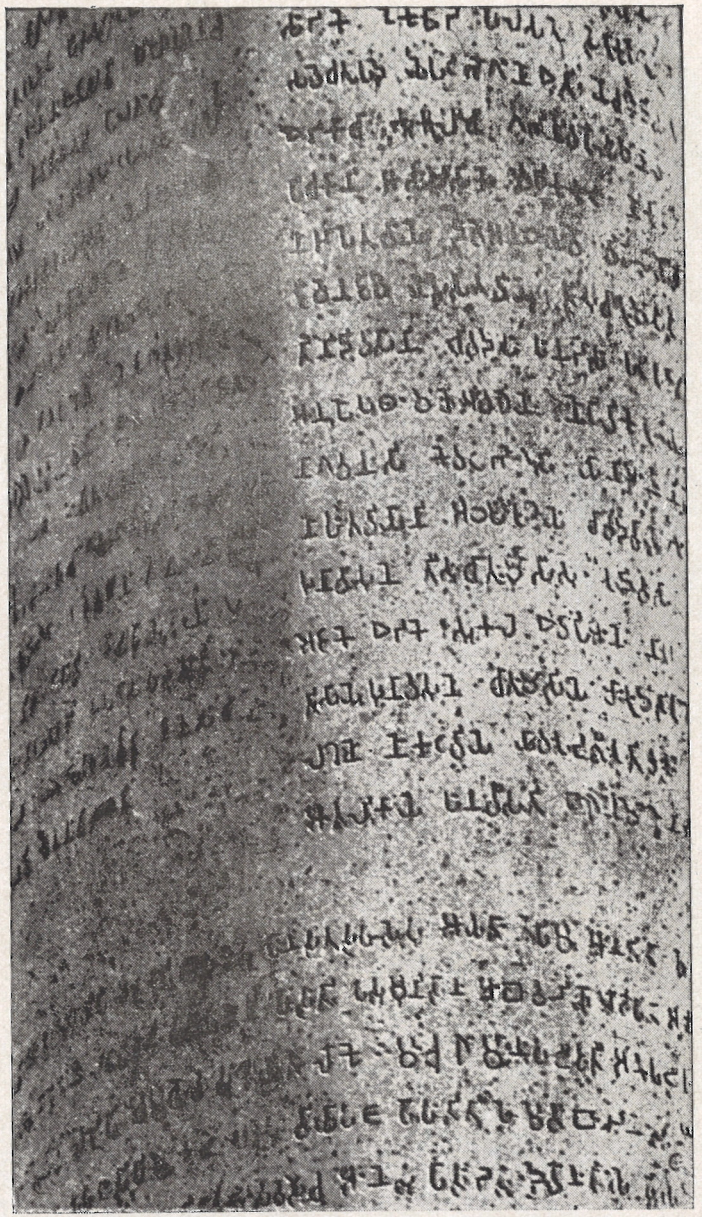
सुकिति-भतिनं स-भगिनिकनं स-पुत-दलनं।
इयं सलिल-निधने बुधस भगवते सकि [यानं]।

(b) Piprāhvā Vase Inscription (Prakrit). (Early fifth century B.C.)

PLATE 2

Piprāhvā Vase

PLATE 3

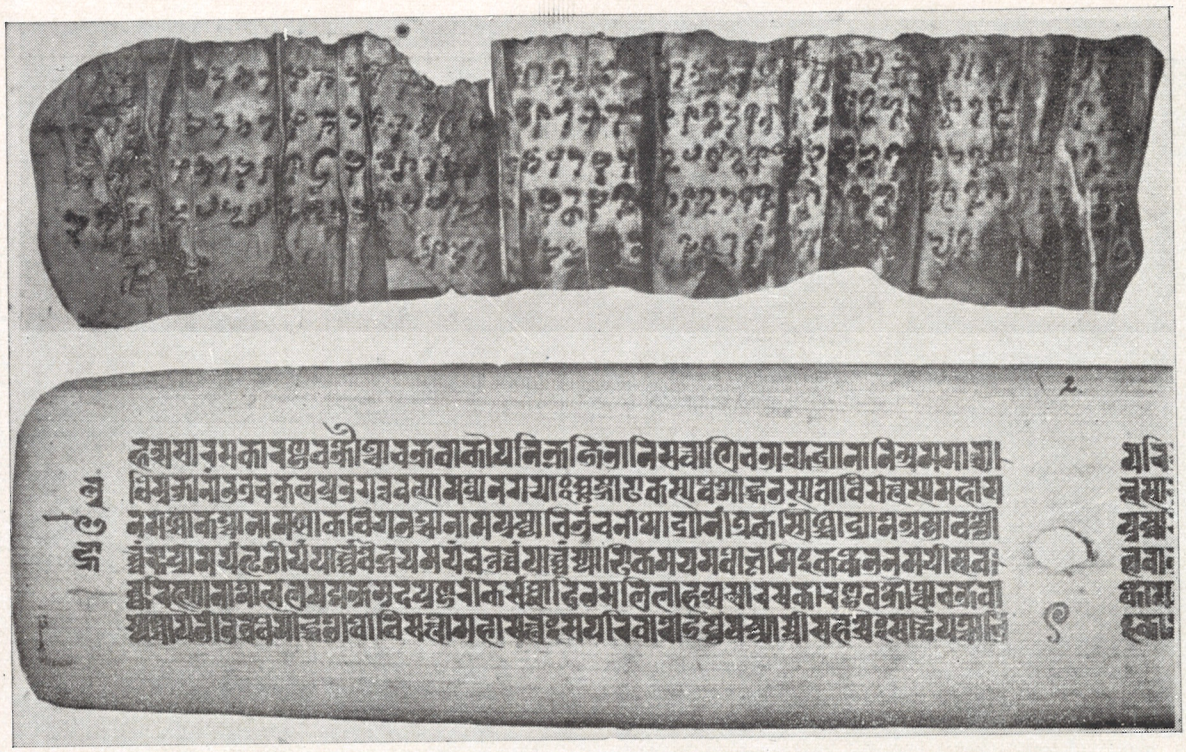


An Asoka Stone Pillar Inscription

PLATE 4

H 5447–2A*a*

PLATE 5



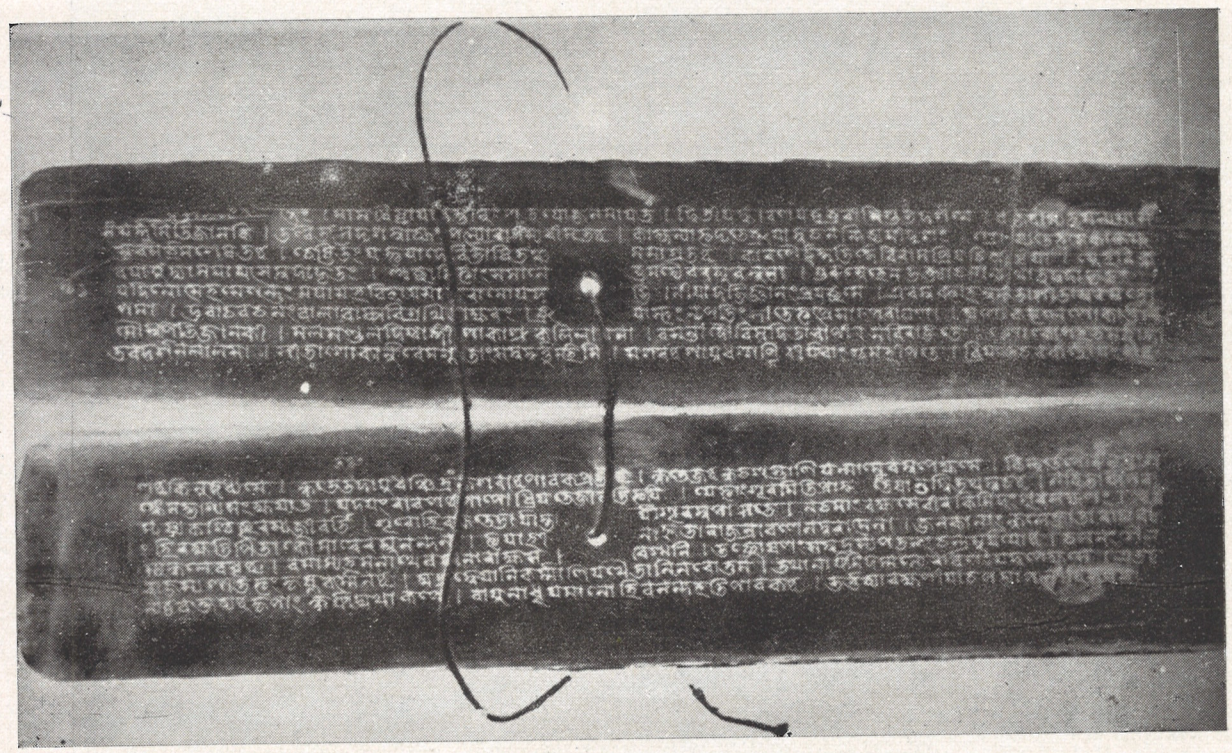
a

b

Courtesy : Prof. Y. G. Naik

(a) Taxila Silver Scroll found in Dharmrajika Stup (Kharoshthi), (A.D. 76)

(b) Portion of Palm-leaf from Nepal (A.D.1165)



Courtesy : Prof. Y. G. Naik

Two leaves of Tada-patra MSS held together by a ' Sutra'

PLATE 6

Courtesy : Prof. Y. G. Naik

Himalayan Bhurja Tree, Kashmir

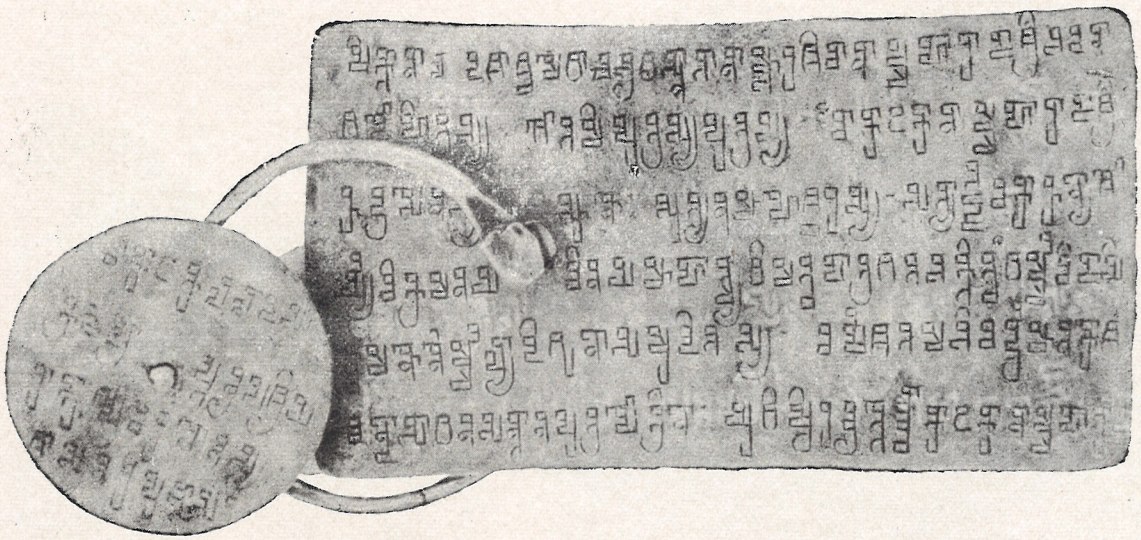
PLATE 7

Courtesy : Prof. Y. G. Naik

Bhurja-patra before processing

PLATE 8

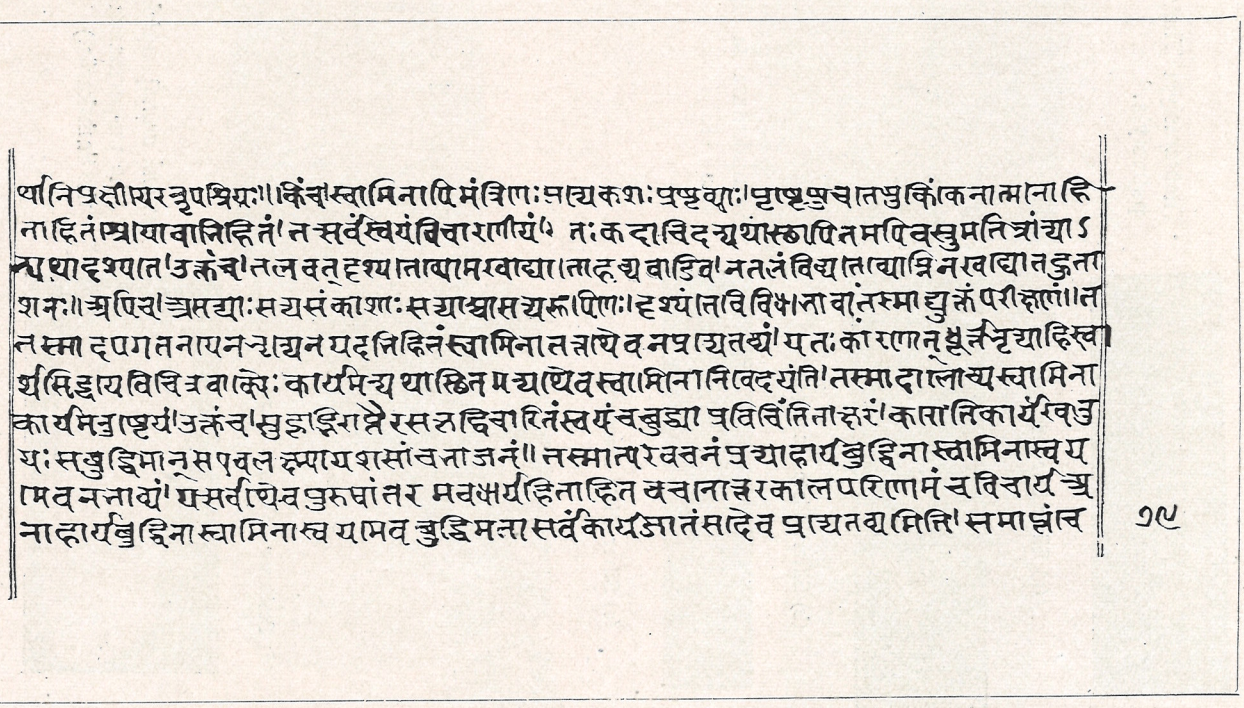
PLATE 9



Courtesy : Central Museum, Nagpur

Seoni Plate of the Vakataka King Pravarsena II (Fifth century A.D.)

PLATE 10



A Leaf from paper MSS of Panchatantra

'Theŭtaras(y)a Thavara-putras(y)a.'

(a) Silver Cup Inscription

'Mumjukritas(y)a s(y)a 20 dra I.'

(b) Silver Plate Inscription

'Mimjukritasa sa 20 10 dha 11.'

(c) Silver Plate Inscription

'Samtśare li devama'

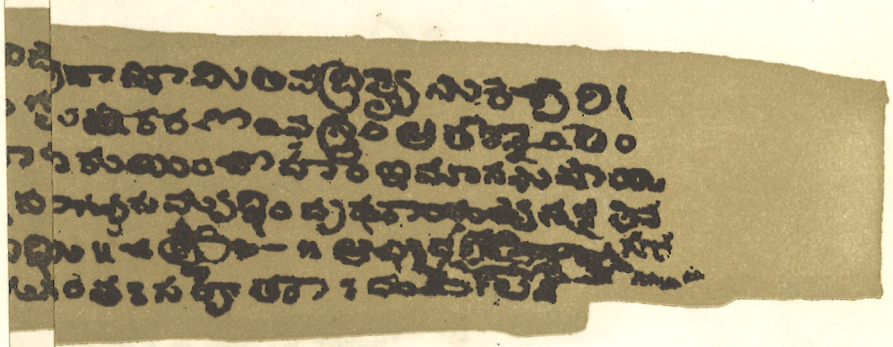
(d) Peshawar Writing Board

[*smank'arana*] *aṇicha ta* (the un-permanence of the Saṁskarās.)

(e) Lahore Writing Board

WRITING MATERIALS USED IN ANCIENT INDIA

PLATE 11



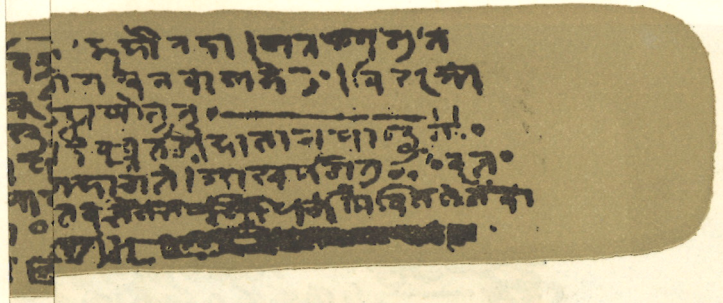
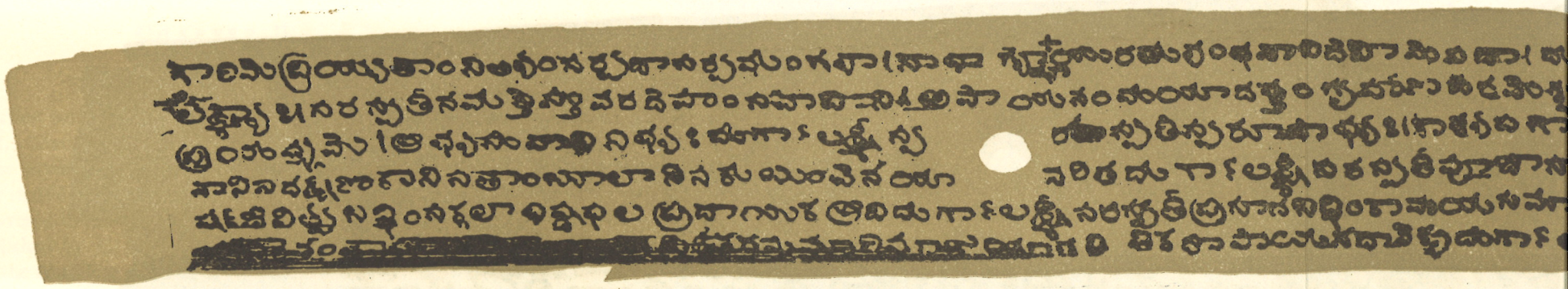
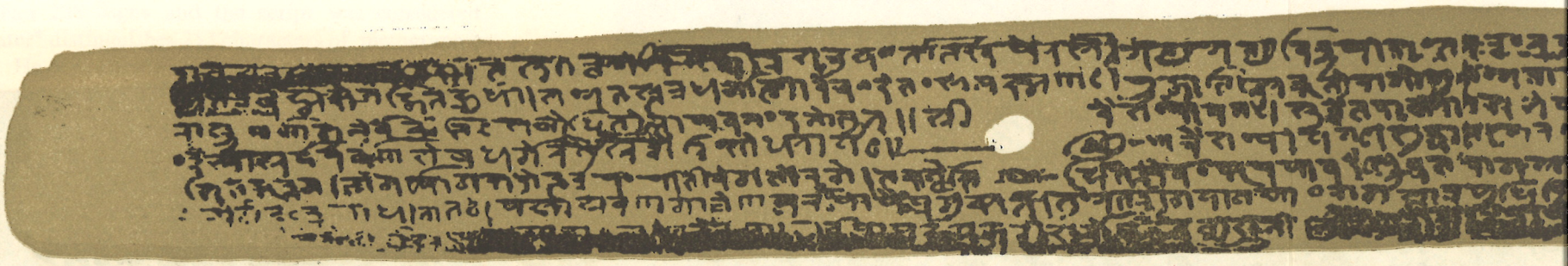


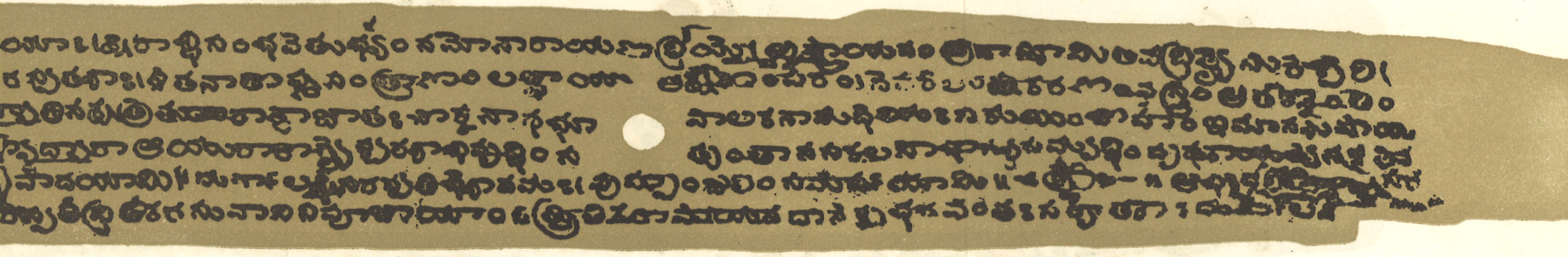
PLATE 12



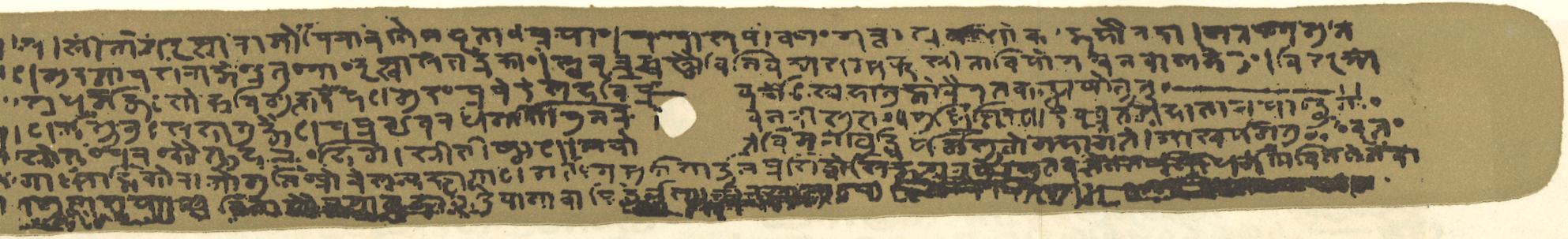
Tādapatra



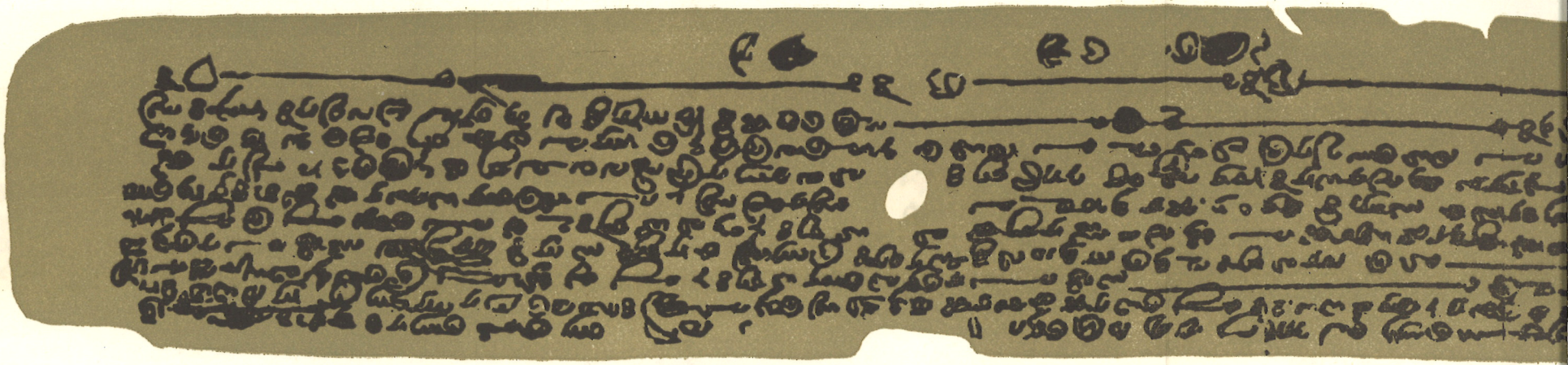
Tādapatra fro



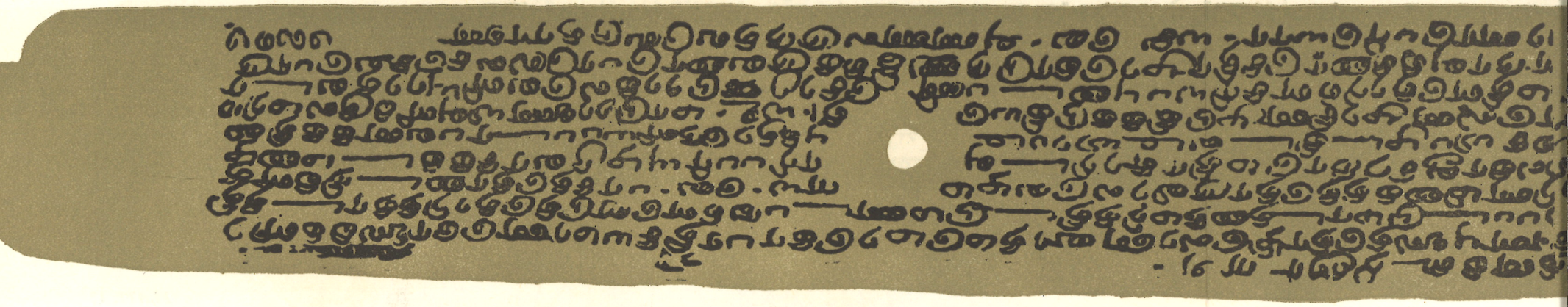
ore Grantha : (a) Tamil, C 1600



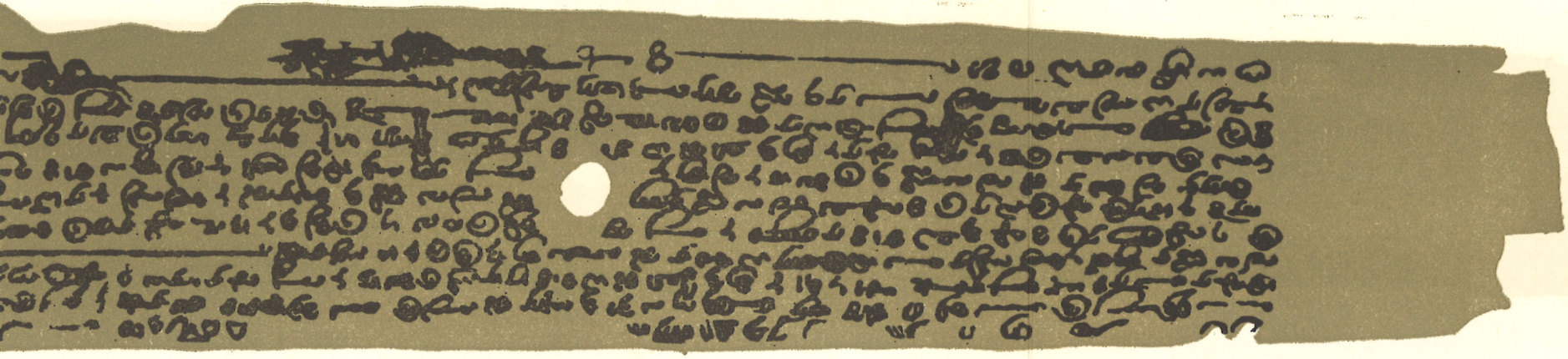
Grantha : (b) C 1600, No. 9594



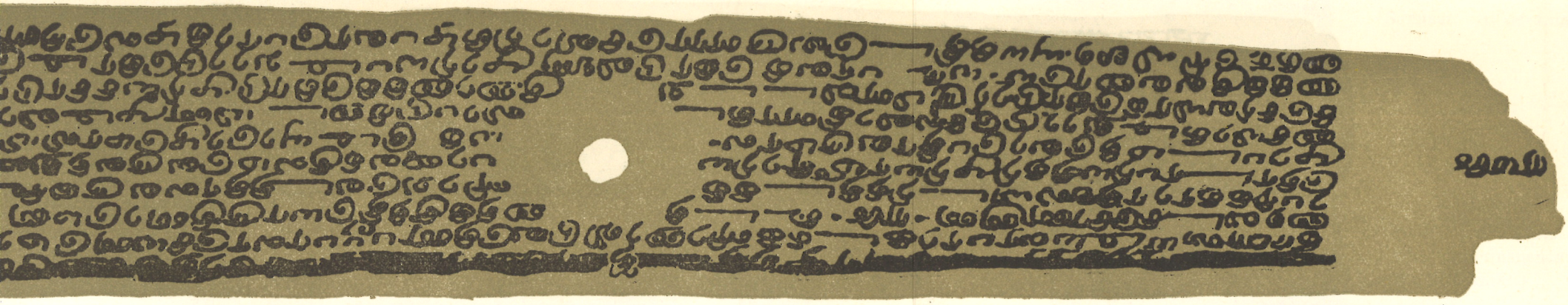
Tādapatra from T



Tādapatra from Tanj



Grantha : (a) Telugu, C 1670, No. 9531



ntha : (b) Nandi Nagari, C 1550, No. 11894

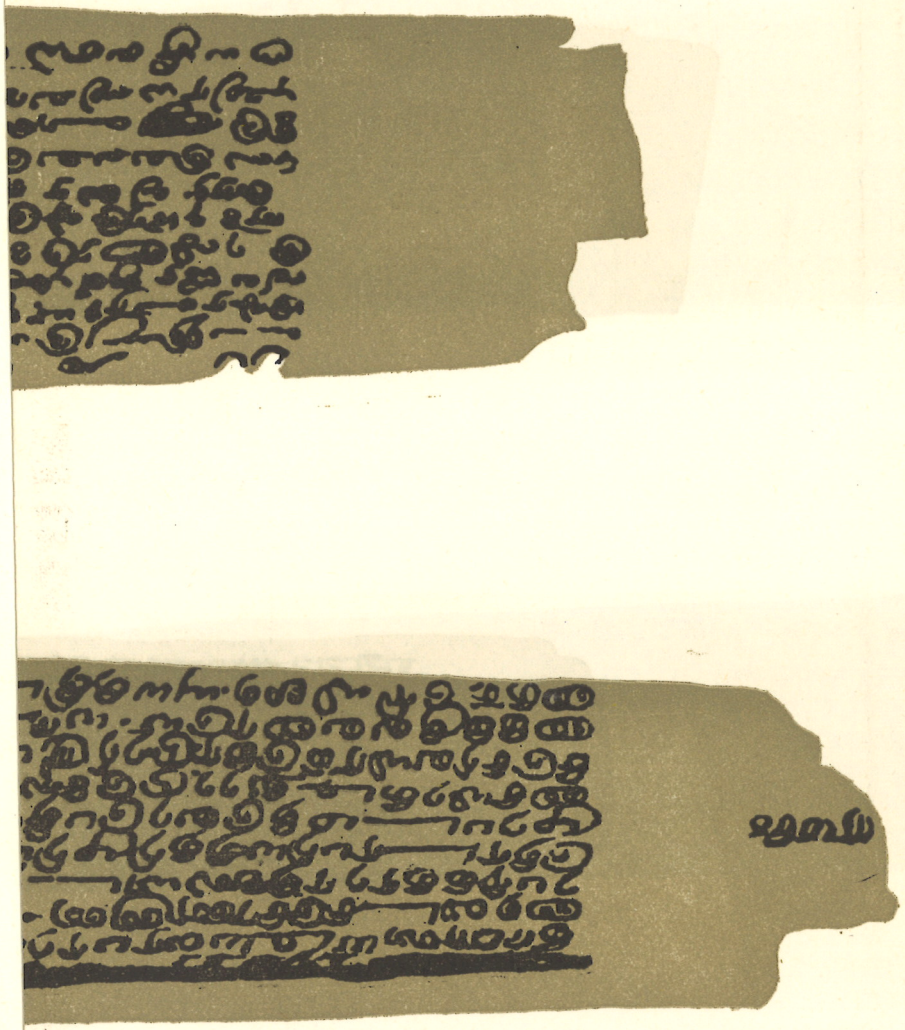


PLATE 13

CHAPTER II

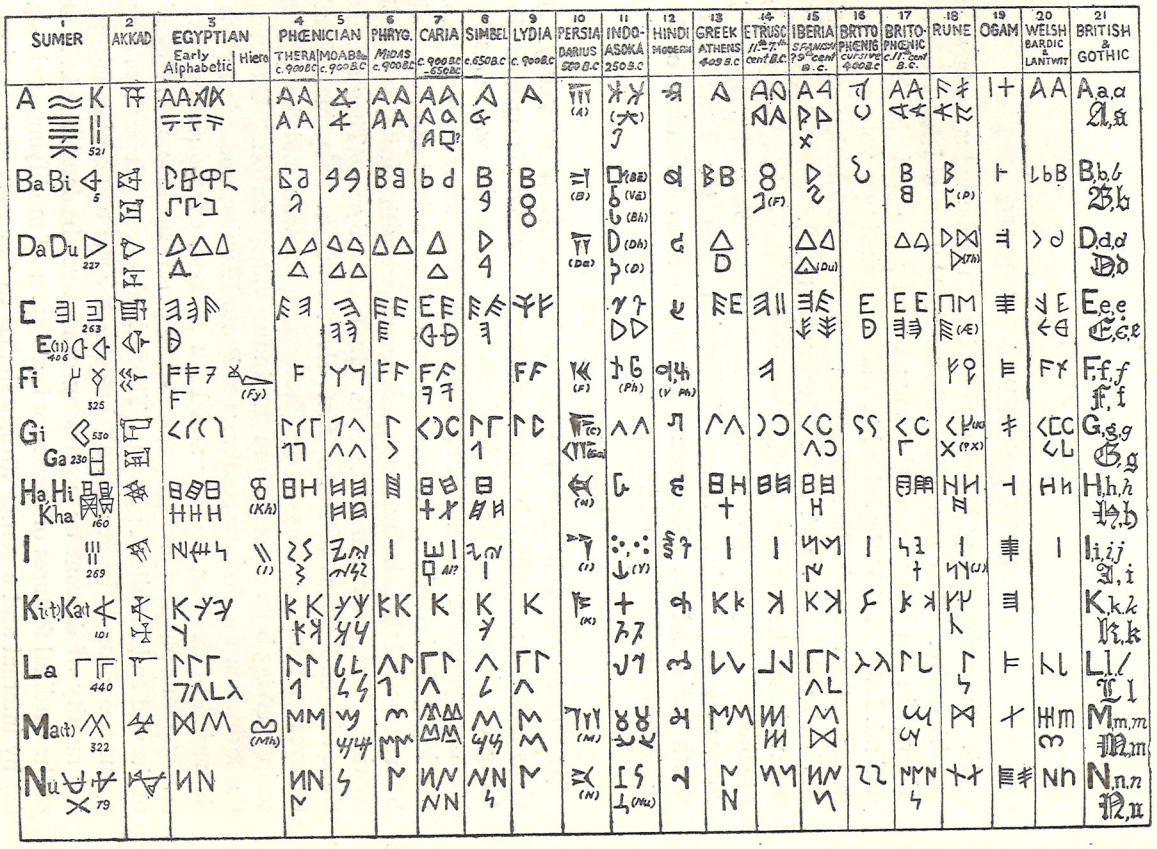
EARLY SCRIPTS OF INDIA

26. The earliest script in India so far known is the Indus Valley pictographic script. Two great cities of over 5,000 years old have been discovered in the excavation of Harappa in Punjab and Mohenjo-daro in Sind. Later in 1931 Sir John Marshall published two volumes[1] on the material discovered in the excavations. The result of further excavations has been published by E. J. H. Mackay (1937-38).[2] Sir John Marshall believed that the founders of the great cities of the Indus Valley were of Mediterranean type who came to India from the West. Fr. Heras[3] has connected the Indus Valley Civilization with the Dravidians of South India and has taken great pains to prove the derivation of Tamil script from the Mohenjo-daro script.

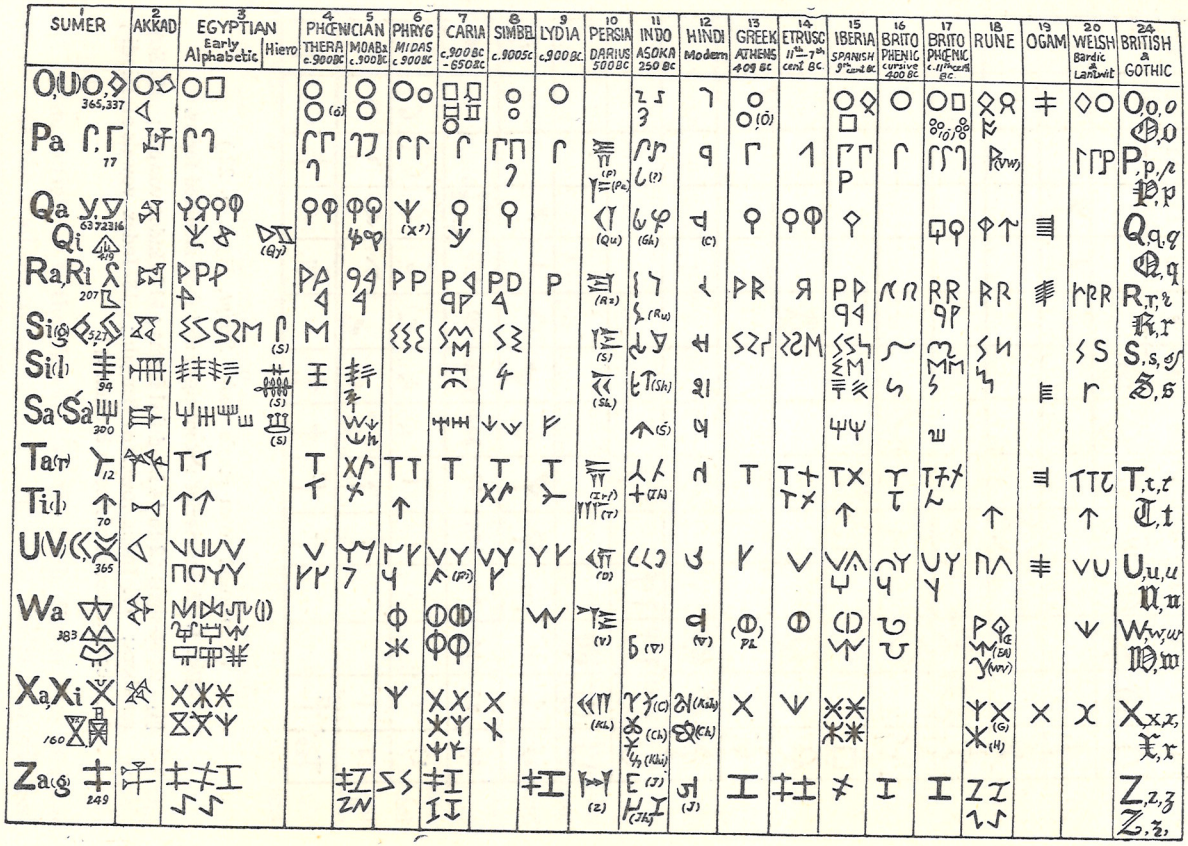
INDUS VALLEY SCRIPT

27. Over 700 seals have been discovered in the Indus Valley. The signs have been classified by some scholars as stylized pictographs. Prof. Laugdon listed more than 288 Signs and the script was considered a closed syllabary. Hunter[4] distinguishes 253 characters of pictographic and ideographic design. He considers the script mainly phonetic. It has been suggested that the Indus script is connected with Hittite hieroglyphic writing. The Hittites lived in Asia Minor and Syria. They are mentioned in the Bible as Hittim or Bene-Heth living in Palestine. Hunter believes in the possibility of the Phoenician, Sabaean and the Cypriote scripts having been derived from the Indus Valley script. " Graphically the script bears a close resemblance to Proto-Elamite, and a less close to Sumerian of the Jemdet-Nasr and Fara periods, except as regards the anthropomorphous signs. The latter bear a close resemblance to Egyptian of the Old and Middle Kingdom. The resemblance to these three scripts seems too close to be accidental, but whether the connection is due to community of descent or borrowing cannot yet be determined.... One of the cardinal features of the script is a system of modifying basic signs (*a*) by internal and external strokes similar to the *gunu* modifications in Sumerian. These do not always alter the sense or pronunciation. (*b*) By the addition of one or more short strokes. The latter do modify at least the sound. These strokes are applied on exactly the same principle

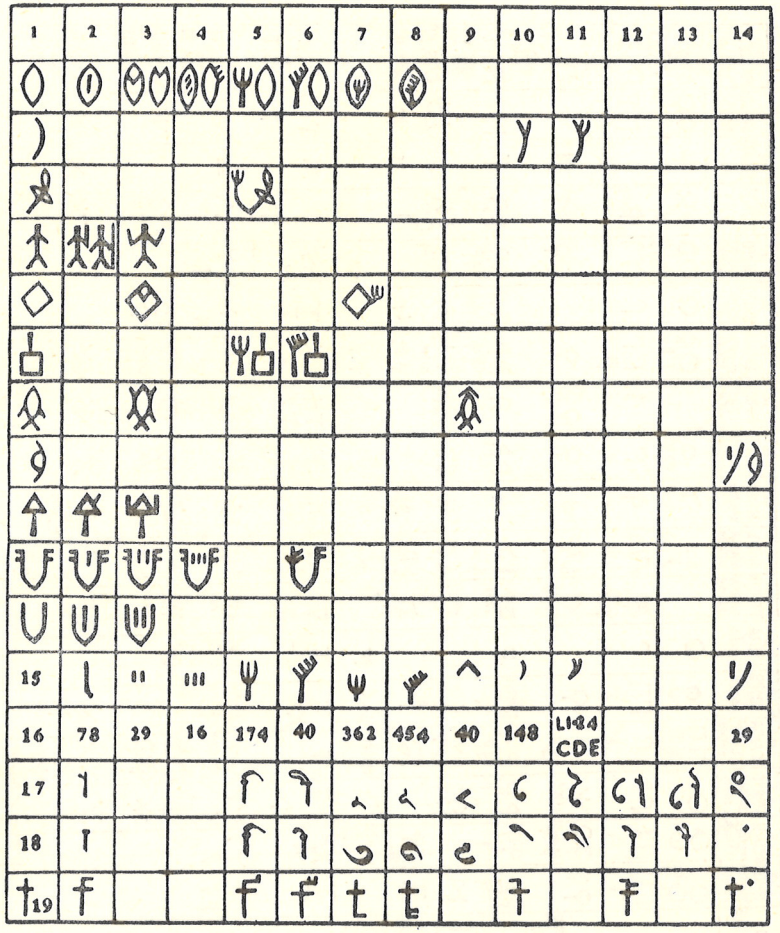
Table 1. **Sumerian Aryan Evolution of the Alphabet.** *Courtesy :* Waddel


1 SUMER
2 AKKAD
3 EGYPTIAN Early Alphabetic Hiero
4 PHŒNICIAN THERA c.900BC
5 PHŒNICIAN MOAB c.900 B.C
6 PHRYG. MIDAS c.900B.C
7 CARIA c.900 BC -650BC
8 SIMBEL c.650B.C
9 LYDIA c. 900B.C
10 PERSIA DARIUS 520 B.C
11 INDO-ASOKA 250 B.C
12 HINDI Modern
13 GREEK ATHENS 409 B.C
14 ETRUSC 11th-7th cent B.C.
15 IBERIA SPANISH 9th cent B.C.
16 BRITO PHŒNIC CURSIVE 400B.C
17 BRITO PHŒNIC c.11th cent B.C.
18 RUNE
19 OGAM
20 WELSH BARDIC & LANTWIT
21 BRITISH & GOTHIC

Sumerian Aryan Evolution of the Alphabet.—contd.


1 SUMER
2 AKKAD
3 EGYPTIAN Early Alphabetic Hiero
4 PHŒNICIAN THERA c.900BC
5 PHŒNICIAN MOAB c.900BC
6 PHRYG MIDAS c.900BC
7 CARIA c.900 BC -650BC
8 SIMBEL c.900BC
9 LYDIA c.900 BC
10 PERSIA DARIUS 500BC
11 INDO ASOKA 250 BC
12 HINDI Modern
13 GREEK ATHENS 409 BC
14 ETRUSC 11th-7th cent BC
15 IBERIA SPANISH 9th cent BC
16 BRITO PHENIC cursive 400 BC
17 BRITO PHŒNIC c.11th cent BC
18 RUNE
19 OGAM
20 WELSH Bardic & Lanbwit
24 BRITISH & GOTHIC

H 5447—8a



(Reprinted from Ray's *Indus Script*, *Fig.6*, p. 22.)

Fig. 1. **Indus Script : Root-signs and their modified forms.**

[1. Root-signs ; 2 to 14 Modified forms ; 15. Index vowels ; 16. Seal numbers; 17. Index vowels of Bengali ; 18. Index vowels of Hindi ; 19. Accented series of Asoka Brahmi क]

as in Brahmi and with the same effect." The script of Mohenjo-daro and Harappa is called Proto-Indian and is considered to be an important link between the pictographic writing and the alphabet.

28. The Indus Valley script itself thus appears to be phonetic and has ideographic origin. The specimen are all in the form of seals.* But the possibility that the materials like papyras, cotton and silk were being used for writing cannot be ruled out. The designs of the signs themselves suggest that they were being painted with a brush on soft materials. Hunter suggests[5] that the Indus Valley script may have had a common origin with Egyptian, Sumerian and Mesopotamian scripts. K. N. Dikshit[6] opines that perhaps the Indus Valley script was the original one which spread to other lands through the *Asuras* and the *Panis*.

Waddel's Theory of Sumerian Origin of Indus Script

29. L. A. Waddel[7] states that Sumerians were the long lost early Aryans in race, speech and script, that their chief seafaring and colonizing branch was the Hitto-Phoenician including the Amorites (*Marutas*) and Kassi or Cassi (used by the Phoenicians-Briton king Partolon on his monument of about 400 B.C. in Scotland[8]). Waddel asserts that the Indo-Aryans who conquered, colonized and civilized India as well as the Western branch of Aryans who colonized and civilized the Mediterranean, North-west Europe, and the British Isles were those leading sea-going branches of the Aryan-Sumerians. Waddel has argued that fifty per cent of the basic words in Sanskrit and other old Indian languages as well as in old English are derived from the Sumerian.[9] Waddel has expressed[10] his belief that the term 'Britain' is derived from 'Borat' or *Bharat*, suggesting thereby that the Indian Aryans and the Britons are the descendants of the same Sumerian-Aryans. Waddel's main thesis is that the Sumerians who, according to him, colonized Indus Valley, also introduced their language and script in India.†

An attempt towards Decipherment of Indus Script

30. Sudhansu Kumar Ray has recently published his study of the Indus script in two memorandums[11] December 1963 and July 1965). He says :

"Indus Script....is the ancestor of the both, the secular Brahmi as well as the traditional vernacular scripts of India...traditional

* *See* Plates 16 and 17. Indus Valley Seals. † *See* Table 1. pp. 34-35

scripts of India are the direct descendants of the Indus script whereas Brahmi was a diversion from the main stream introduced to serve religio-political purposes of the Imperial *Mauryans*."[12] Ray further

Fig. 2. **Indus-signs compared with letters of Brahmi and modern Indian Scripts.***

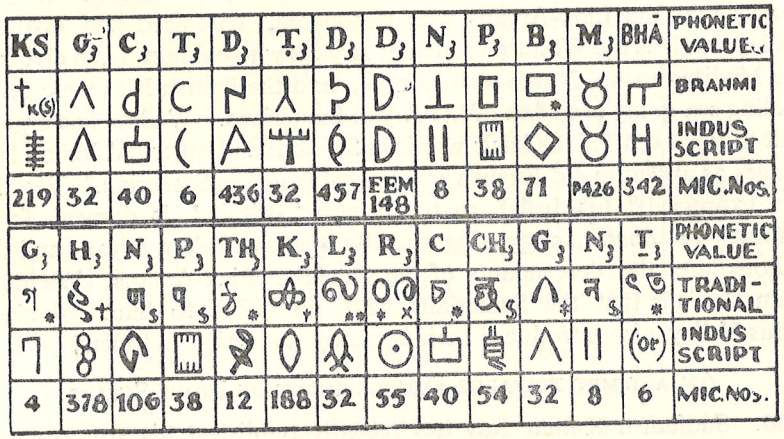
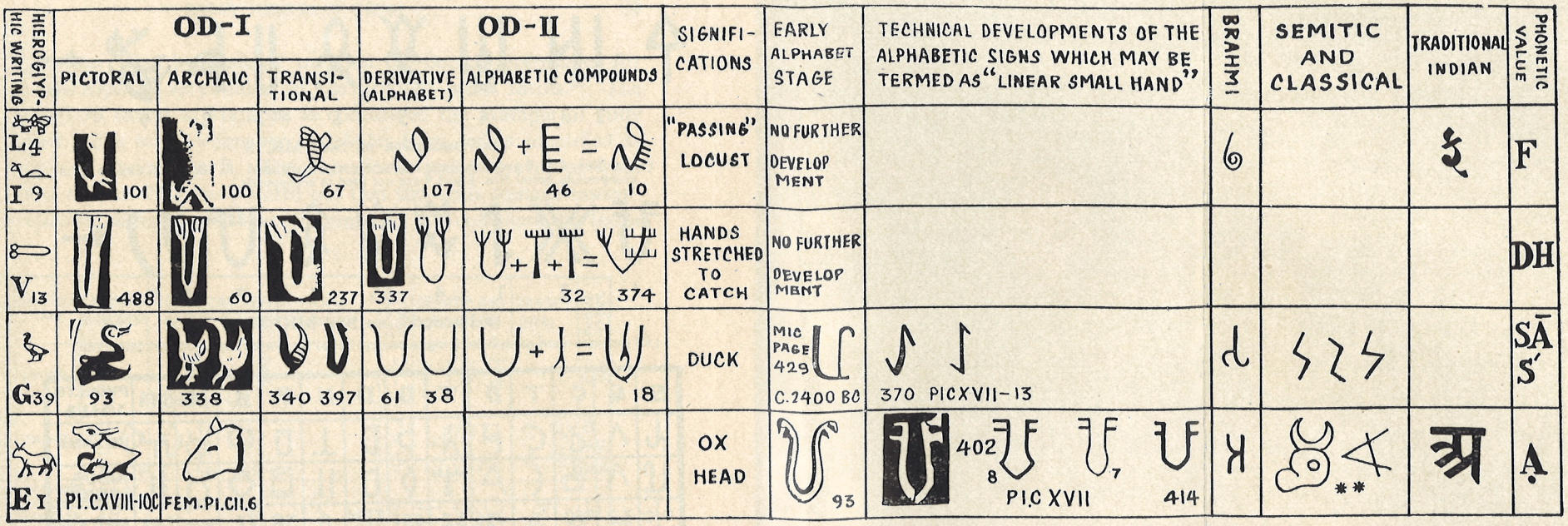


Fig. 3. **Brahmi characters compared with Alphabetic signs of Indus Valley.†**

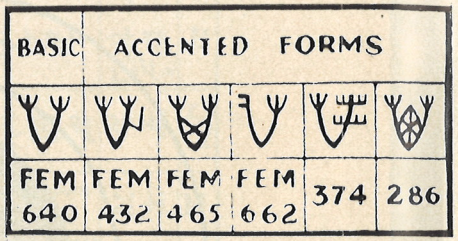
adds that the Buddhist theologians and officials introduced Brahmi script by revising the 'Vernacular Brahminical script' for religio-political purposes. The traditional Hindu script was preserved by

* Ray: *Indus Script*, p. 23. † *Ibid*, p. 24.

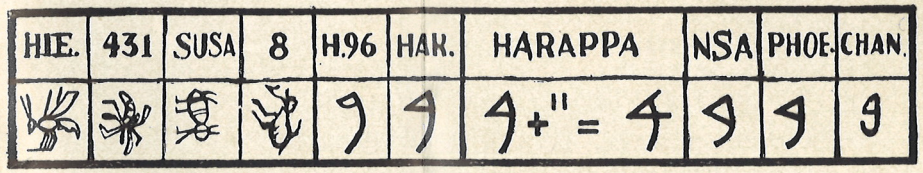


(a) Development of Devanagari Letters from Indus script (*Indus Script*, Memo. 2, pp. 36-37).

(b) Frequently employed Indus signs occurring at the end of the Inscriptions



(c) A basic Indus sign and its accentuated and Conjoint forms

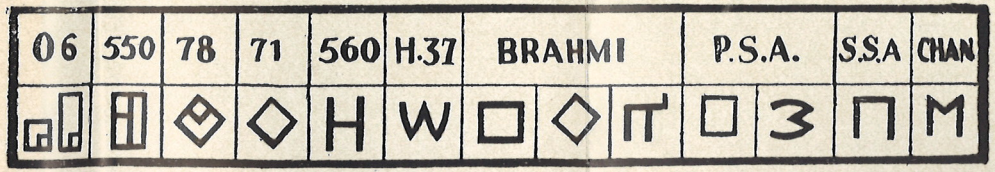


(d) Pictographic sign of a Bee and the evolutions of simplified alphabetic signs

(e) Various signs of Bull's head

1. Hieroglyphic Ideograph ; 2. Indus seal 87 ; 3 Cretan pictograph ; 4. Proto-Sinaitic ; 5. SSA phon. A ; 6 & 7. Proto-Sinaitic ; 8. NSA phon-A; 9. Brahmi ; 10. Devanagari.

Figs. b to f are taken from Ray's *Indus Script : Methods of My Study, 1966.*



(f) Mohenjo-daro House-B and the evolution suggested by Shri Ray

PLATE 14

1 2 3 4 5 6 7 8 9

(a) Inscription on Seal MIC 8

(Serial Nos. 1 to 7 are alphabetic characters which are used as such and also to form compounds. Serial Nos. 8 and 9 are not used in compounds.)

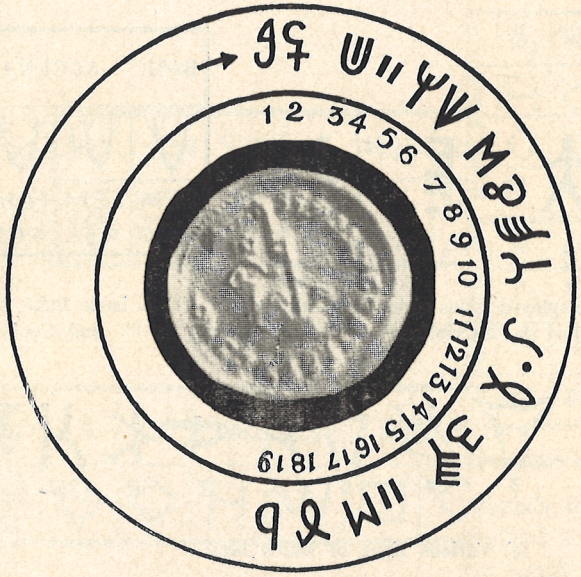
1 2 3 4 5 6 7 8 9

(b) Inscription on Seal MIC 21

(All the signs used as alphabetic signs, execept Serial No. 4 are considered semi idiogram.)

S	G	C	T	D	T	D	D	N	P	B	M	BHA	PHONETIC VALUE
													BRĀHMĪ
													INDUS SCRIPT
DJO	32	40	6	436	32	457	FEM 148	8	38	71	P426	342	MIC.Nos.

(c) Thirteen Indus signs deciphered by Shri Ray on the basis of Brahmi

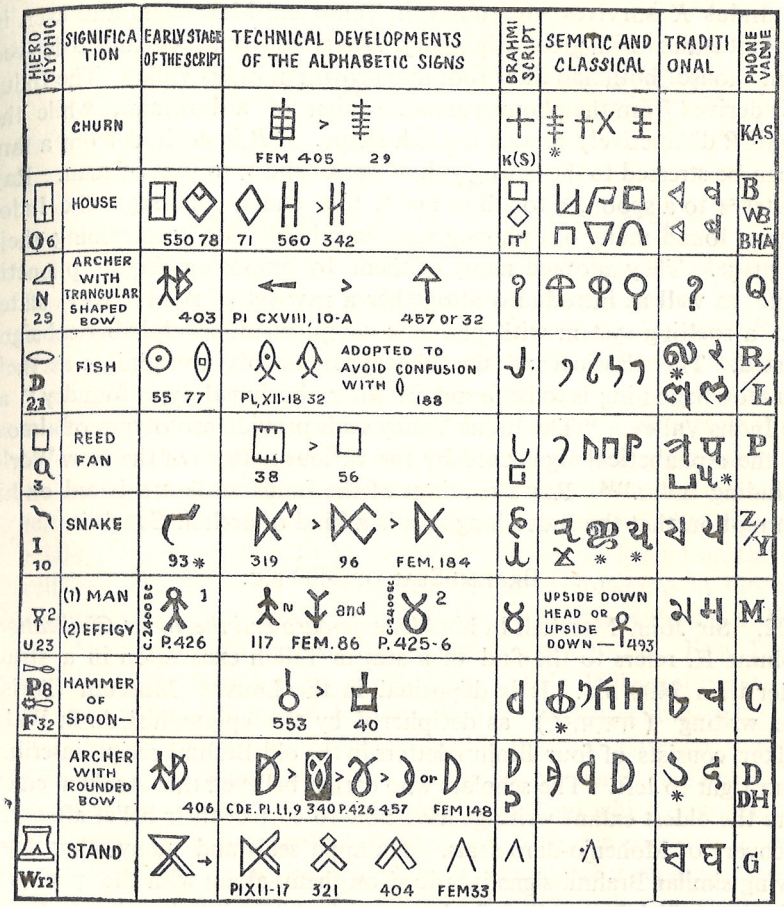


(d) Terracotta Seal from Chandraketugarh

(*Figs.* a to d from Ray's *Indus Script : Methods of My Study*).

PLATE 15

the Brahmins. Ray has pointed out that the Bengali graphemes for *ṛ, r* and the *Reph* are very similar to the original Indus forms.[13] The seal No. H-96 found at Harappa is considered the example of fully developed Indus script where the first letter from left is identified as the origin of Phoenician B. The Phoenician script is evolved from the Indus script. Ray has pointed out that the seals contain inscriptions showing different attitudes of animals. He considers the Indus



Courtesy : Ray, *Indus Script Memo. 2. pp. 38-39.*

Fig. 4. **Development of Brahmi letters from Hieroglyphis**

Seals 'educational equipment' for teaching grammar. Ray has read some of the inscriptions on the seals to mean "(the unicorn) stares at" (MIC 46); "(the unicorn) coughs out" (MIC 19); "(the bull) with fear in the eyes" (MIC 333); "(is there) the Commander of Army from the Fort" (MIC 15); "(is there king) Zasarātha 2" (MIC 93).*

31. Ray has argued his case with figures showing the development of the phonograms from the hieroglyphs (*see* fig. 4). He points out that the Indus *K* survives vigorously in Tamil and Malayalam and even in Hindi it stands with great originality. *B* derived from 'bee' and *B* derived from 'house' both had their root and growth in Indus Valley. The Indus *Q* is derived from the phonogrammatic sign of a bowman, while the Tamil *R* distinctively retains the fish shape. *P* is derived from a fan. य can be stressed to the heiroglyph of snake and म to that of man. Ray relates च to a spoon, द to a bow and घ to a stand. and says the Indo-Aryans found many old phonograms unsuitable for transcribing their language. They adopted many of them by imposing Aryan phonetic value as well as introduced altogether a new set of signs. Ray states that a spelling system with phonetic complements in alphabetical signs existed. The classical and the Phoenician scripts are similar as their common beginning is to be found in the 'aboriginal type foundry' at the Indus Valley. "The Indus Valley seals provide prototypes of almost all the alphabetical signs used by the various nations of the New World including India."[14] Ray's readings of the Indus seals are based on his assumption that the Indus language is a kind of archaic Sanskrit.

Brahmi Seal of 2400 B.C.

32. Sir John Marshall in his *Mohenjo-daro and the Indus Civilization*, Volume II, refers to the find of a seal in Telloh excavation in a strata older than 2400 B.C. It is deposited in the Louvre Museum (Paris). The writing (मङ्गमाल) as deciphered by the epigraphist A. B. Walawalkar consists of four Brahmi letters in the old Brahmi script inscribed from right to left. The scholars who earlier believed that Asokan edicts were the oldest extant writings have now to correct their belief after the discovery of Mohenjo-daro seals, Harappa seals and many other finds having similar Brahmi signs inscribed on them, along with the pictographic signs which have not so far been satisfactorily deciphered. A Babylonian tablet, dating back to the fifth century B.C., is kept in the British

* *See* Plate 16, Indus Valley Seals.

Museum[15] which is inscribed with a contract in Cuneiform script (*see* Plate 20). The inscription contains endorsement by some Indian dignitary in pre-Asokan Brahmi. Many other pre-Asokan inscriptions are now known to the students of epigraphy.

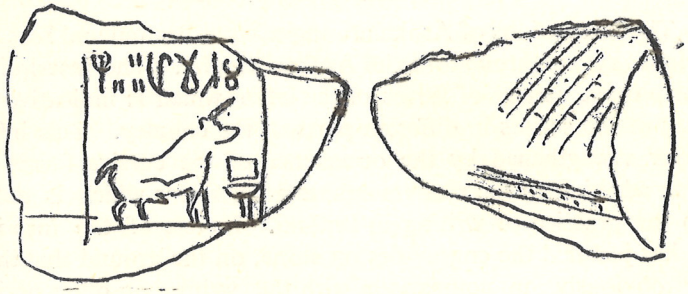


Fig. 5. **Djokha Seal**

The Antiquity of the Brahmi Inscriptions

33. Ojha has referred to the Badali inscription[16] discovered near Ajmer. The inscription dates to Mahavir's eighty-fourth year, i.e. 443 B.C. The Erān coin legend (fourth century B.C.) and the Piprāhvā Buddhist Vase Inscription (fifth century B.C.) are referred to in Para 2 (Pages 5 & 6). The writing from right to left on Erān coin has been claimed by Bühler to be a proof of the Brahmi written in the *boustrophedon* style.[17] Fleet who edited the English version of Bühler's *Indishe Palaeographie* mentions "the possibility of the explanation (of the legend running from right to left) is to be found... in a mistake of the engraver of the die, who... might have forgotten that he ought to reverse the legend on the die itself".[18] The Sohagura Copper-plate* found at Sohagura in Gorakhpur District of Uttar Pradesh, is placed in the fourth century B.C.,[19] while the Mahasthan plaque† found at the Bogra District, East Pakistan, belongs to the third century B.C.[20] The Vakala Hill inscription‡ found at Sopara near Bombay belongs to the second century B.C.[21] The Pabhosa inscription§ on the rock outside the cave, dates to the second century B.C.[22] Bhattiprolu relic casket inscription[23]‖ in Dravidi, gives the southern variety of the characters of Brahmi which appears to have descended from pre-Asokan Brahmi, *i.e.* a source common to Asokan Brahmi.[23] Bühler asserts that the Dravida alphabet separated from the main stock of the Brahmi, long before the Erān coin was struck, at the

**See* Plate 21(a). †*See* Plate 22(a). ‡*See* Plate 22(b). §*See* Plate 24. ‖*See* Plates 26 and 27.

latest in the fifth century B.C. He adds that the Brahmi has been commonly used since the earliest times even in north-western India, and that it was indeed the real national script of all Hindus.[24]

Brahmi Inscriptions of Asoka

34. The inscriptions of Asoka are engraved in Brahmi and Kharoshthi by various masons throughout the Asokan empire. The inscriptions in Brahmi present variety of forms of the letters which is indicative of the currency of the scripts in different parts of the country. This inference is further strengthened by the occurrence of the cursive forms of the letters in addition to the monumental angular forms which is definitely due to the practice of writing in Brahmi. In one of the inscriptions Asoka has justified the engravings on stone, on the ground that they last long,[25] obviously in comparison with the writing on other perishable mediums such as cloth, leather, wood, etc. This inference is strengthened when we take into account the fact that Asoka recommends several texts for the use of monks.[26]

Divergent Forms of Brahmi

35. Bühler has reproduced eight divergent forms of अ in Brahmi as shown in fig. 6 below. He has explained[27] that the " .... first seven varieties have been caused by two conflicting tendencies, a liking for angles and a liking for curves, which are observable also in the divergent forms of other Brahmi letters. Nos. 1-3 are purely angular. The first and the second differ only thereby, that in the one, the obtuse angle touches the vertical line, and that in the other it has been first made separate and then connected by a short cross-bar. In the third form the right-hand stroke is slightly bent in the middle and the whole letter resembles a Greek X*t*. Nos. 6 and 7 show on the left, instead of the straight sides of the angle, two well developed curves, and in No. 6 they are united in the middle, while in No. 7 they do not touch. Nos. 4-5 appear to be mixed forms, as the former has on the left a curve below with a straight stroke slanting towards the left, while in the latter the curve stands above and the straight stroke below. This apparent mixture may be due to an incomplete change of the older angular form. But the two varieties may also be explained as cursive developments from No. 6, the writer not caring to make the more elaborate curve twice. No. 8, finally, is a purely cursive

Fig. 6. **Eight forms of Brahmi अ**

development from No. 6, a straight stroke being substituted for the notched line on the left."

" The differences between the writing of the northern and the southern versions are quite as considerable as those found four hundred and forty years later, between the letters of the northern and southern inscriptions of the first and second centuries A.D. And it must be kept in mind that the circumstances, under which the Edicts were engraved, were not favourable to a full expression of the local varieties of the letters. Copies were sent out from Pataliputra into the provinces, which were recopied and, as the dialectic differences in the language and occasional peculiarities in the wording prove, also recast by the clerks of the district-governors, before they were made over for engraving to the masons."

Buhler on Antiquity of Brahmi [28]

36. "....local differences are traceable in the writing of the several versions and they prove that the Brāhma alphabet had had a long history before the third century B.C. If the slowness of the change of the forms and the comparative insignificance of the local variations which the inscriptions of the next four or five centuries show, are taken as the standard, it will be necessary to assume that the letters of the Edicts had been used at least during four or five hundred years." "....later forms of the medial vowels, the position of the anusvāra at the top of the consonants and the occasional use of serifs or short-bars at the top of verticles,....do not agree with the assumption that writing was a recent practice in Asoka's times. To me it seems that they are most easily explained, on the supposition that several, both archaic and more advanced, alphabets existed in the third century B.C., that an archaic alphabet was chosen for the perpetuation of the Edicts, but that the clerks mixed the forms....it remains undeniable that the writing of the Edicts is in a state of transition, and this alone is sufficient to warrant the assertion, that their alphabet certainly had had a long history.... the literary evidence points to the common use of writing in India during the fifth and perhaps in the sixth century B.C. ...the palaeographic evidence proves the Brahmi lipi to be the oldest Indian alphabet and to be probably identical with the script referred to in the Buddhist Canon...."

Brahmi an Invention of Grammarians

37. Cust says, " The Indian alphabet is a marvellous and magnificent phenomenon quite unrivalled in the world. It presents a symmetrical

combination of symbols designed by skilled grammarians to indicate various shades of sounds and is grouped in scientific order."[29] Bühler supports this view thus " ... Brāhma alphabet must be considered the work of Brāhmaṇs acquainted with phonetic and grammatical theories. The Pandit's hand is clearly visible in the arrangement of the letters, used by Asoka's masons at Mahabodhi Gaya, according to their organic value as vowels, dipthongs, nasalised vowel, vowel with the spirant, gutturals, palatals and linguals. And it is also visible at a much earlier stage in the very formation of the alphabet. Nobody but a grammarian or phoneticist would have thought of deriving five nasals, one for each class of the Indian consonants, from the two Semitic prototypes* and of inventing in addition a sign to denote the nasalisation of vowels, the *anusvāra*, or of forming two spirants, *ha* and the *Visarga*. Nobody but a Sanskrit grammarian would express the initial *U* by half the sign for *va*, and the phonetically very different, but etymologically allied *ṣa* and *sa* by modifications of one sign, or derive the initial *O* from *U*, *I* from *E* and *ḷa* from *ḍa*. And only a grammarian would invent the peculiar system of notation for medial vowels, which throughout marks the distinction between short and long ones, omits the short *a*, and expresses the long *ā* by adding to the consonants the mark, used for differentiating *Ā* from *A*, and the remaining medial vowel by combinations of the initial vowel-signs, or of modifications thereof, with the consonants. This is so complicated and so highly artificial that only a Brāhmaṇ's or Pandit's ingenuity can have worked it out." "... The expression of all long vowels by separate signs, which occurs in no other ancient alphabet but the Brahmi lipi, was no doubt natural and desirable for the phoneticists or grammarians, who developed that alphabet."[30]

Kharoshthi : Gandharian Alphabet

38. Cunningham has noted[31] that the Kharoshthi was often called 'Bactrian character' but points out that not a single example of this writing has been found to the north of Hindu-kush. This script was in use on the banks of Indus and in Punjab even east of Sutlej as is evidenced from the Kanishka inscription, found from a *stūp* forty miles to the south of Bhavalpur. Its use was also current in Kabul and Kandahar and therefore Cunningham names it 'Gandharian Alphabet'. Dr. Taylor says,[32] "The earliest monument of the Iranian group of alphabets comes, strange to say, from a region which formed one of the Indian provinces of the empire of Darius. In 1836 a French officer in the service of Runjeet

* *See* Chapter III for the various theories on the Origin of the Brahmi Alphabet.

Singh made known the existence of a long inscription in an unknown alphabet engraved on a rock west of the Indus in the direction of Peshawar. It is usually called the Kapur-di-giri inscription, from the name of a neighbouring village. It is also known as Ashok's Shahbazgarhi* inscription named after the village near which it was found. By the labours of Prinsep, Lassen and Norris it was ultimately deciphered, and it proved to be a version of the fourteen Edicts of Asoka, the grandson of Sandrocottos (Chandragupta), the contemporary of Seleucus Nicator. The Kapur-di-giri inscription is written from right to left, in a cursive alphabet of the Aramean, or rather of the Iranian type." Taylor concludes that the Kharoshthi was introduced in India much earlier than the reign of Asoka. According to him twenty Aramean consonants were developed into an elaborate alphabet of thirty-five letters of which five were vowels, some aspirated letters which were not known to the users of the Aramean alphabet. Dr. Taylor believes that the Aramean alphabet came to be introduced into Afghanistan and Punjab about 500 B.C., i.e. after the accession of Darius. As a result of the contact with the fully developed Brahmi alphabet, the Aramean alphabet was improved upon for use of the Sanskrit language. The name Kharoshthi, Cunningham suggests, appears to have been derived from the name of its inventor or introducer Zoroster or Zardusht. Thus the oldest example of the Kharoshthi alphabet so far discovered is the Asoka Edict at Shahbazgarhi and Mansera dating back to 250 B.C. The alphabet was in use till the second century of our era.

Mayura Symbol on Indian Coins

39. The Kharoshthi script used to be mainly employed by the merchants. In the *Baveru Jātaka* (Babylon-Jātaka) there is an account of some of Indian sea merchants who carried a peacock to the land of Baveru.[33] Prof. Rhys David tells us that in the Persian cunieform edicts of Darius, Babylonia is referred to as Babiru. The *Mayūra* or peacock symbol is used on the Indian coins along with many other. Cunningham says : "But amongst all these numerous symbols I do not find one that points unmistakably to *Brahminism* such as the several symbols that were certainly *Buddhist*. Of these the most remarkable are the Chaitya symbol and the holy tree, surrounded by a Buddhist railing.† The *Swastika* occurs but it was common to both the religions. The pentagonal star is also seen but both of these symbols have also been found in other countries."[34]

* *See* Plate 30. † *See* Plate 18 for Indian Coins.

Origin and spread of Kharoshthi[35]

40. "...the Kharoshthi penetrated during the reign of the Śaka Satrap and King Śuḍasa or Śodāsa as far as Mathura, where, however, as the enormous quantity of Jaina and Bauddha votive inscriptions shows, the Brāhma alphabet was at that time and later the usual one.... The epigraphic evidence shows therefore that in the third century the popular use of the Kharoshthi was strictly confined to the Punjab and that it was nothing more than a secondary script, running along by the side of the Brahmi, which prevailed all over India."

"... Its derivation from the Aramaic alphabet has been generally accepted... its immediate source is the Aramaic alphabet of the Akhaemenian period, and the introduction of the Aramaic letters into India dates from the time, when the Akhaemenian Kings of Persia had conquered the Punjab, just those districts where the Kharoshthi has its real home. As the Persian conquest probably happened shortly before 500 B.C., it is impossible that the Kharoshthi can have been developed before 450 B.C."

"... Its full system of palatals and linguals cannot be designed for any other language than Sanskrit or an ancient Prakrit, the only forms of speech which possess five sounds of each of the two classes mentioned. ... the tract, to which the Kharoshthi inscriptions of the third century B.C. are exclusively confined, corresponds to the Gandhara country of ancient India, the chief towns of which were Puṣkalāvati Hashtnagar to the west of the Indus and Taxila or Shah Deri to the east of the river. And it is here, of course, that the Kharoshthi alphabet must have originated."

Kharoshthi is a Clerk's Alphabet[36]

41. "...it appears natural to assume that the Persian Satraps carried with them also into India their staff of subordinates, who were accustomed to the use of the Aramean letters and language. And this would fully explain, how the Hindus of the Indo-Persian provinces were driven to utilise the characters, commonly employed by the scribes and accountants of their conquerors, though they already possessed a script of their own. The Kharoshthi alphabet would appear to be the result of the intercourse between the offices of the Satraps and of the native authorities, the Indian Chiefs and the heads of towns and villages, whom as the accounts of the state of the Punjab at the time of Alexander's invasion show, the Persians left in possession in consideration of the payment of their tribute. The Hindus probably used at first the pure Aramaic characters, just as in much later times they adopted the Arabic writing for a number of their dialects, and they introduced in the course of time the modifications, observable in the Kharoshthi alphabet, for which process the additions to the Arabic alphabet, employed for writing Hindi, furnish an analogy, perhaps not perfect but, nevertheless, worthy of notice ... Kharoshthi alphabet is not a pandit's, but a clerk's, alphabet."

"... the natural inference is that this alphabet was framed by persons who paid regard only to the requirements of ordinary life. The other two peculiarities mentioned, the substitution of the *anusvāra* for all nasals, standing before consonants, and the substitution of *ka* for *kha*, of *ta* for *tta* and so forth are clearly the devices of clerks, who wished to get quickly through their work. If thus the Kharoshthi appears to be an alphabet, framed with particular regard to the wants of clerks, that agrees with and confirms the assumption, put forward above, according to which it arose out of the official intercourse between the scribes of the Satraps and those of the native chiefs or other authorities."

Vowel System of Kharoshthi

42. The vowel-symbol for initial *a* was developed in the Kharoshth from a sign like a pot-hook or a curved top of a 'bishop's crozier'. Other vowel-symbols for *i*, *u*, *e* and *o*, when used individually are constructed by adding side strokes. These side strokes were attached to the consonant graphemes to represent the addition of vowels in the middle. There is no distinction of long and short vowels in Kharoshthi which appears to be simplified version of the Brahmi vowel-system.[37]

"... Kharoshthi vowel system, and the compound consonants ... have been elaborated with the help of the Brāhma alphabet. Among the vowel signs the medial ones have been framed first and afterwards only the initial *I*, *U*, *E*, *O* ... The position of the four medial vowels thus closely agrees with that of the corresponding signs of the Brāhma alphabet, where *i*, *e* and *o* stand at the top of the consonants and *u* at the foot.

"...the Kharoshthi, like the Brahmi, considers the short *a* to be inherent in all consonants and does not express it by any sign, it becomes difficult to avoid the inference, drawn already by Professor Weber, that the Kharoshthi system of medial vowels has been borrowed from the older alphabet."

"... The marking of the initial *I*, *U*, *E*, *O* by *A plus* the corresponding medial vowel-sign is, of course, an independent invention of the framer or framers of the Kharoshthi and probably due to a desire to simplify the more cumbersome system of the Brahmi, which first developed the

initial vowels, next used them in combination with the consonants and finally reduced their shapes in such combinations to simple strokes and curves. Similar attempts have been repeatedly made on Indian ground. The modern Devanagari has its ओ and औ since the thirteenth or fourteenth century, the modern Gujarati has its *E*, *AI*, *O* and *AU*, consisting of *A plus* the medial vowel-signs, and the Tibetan alphabet, framed out of the *vartu* letters of the seventh century A.D., expresses even *I* and *U* by *A plus i* and *u*. These examples show that the idea at all events came naturally to the Hindus and that it is unnecessary to look for a foreign source of its origin."[38]

Kharoshthi Consonants[39]

43. " The rules for the treatment of the compound consonants again agree so fully with those of the Brahmi, especially with those adopted in the Girnar version, that they can only be considered as copies of the latter.

(1) Double consonants like *kka*, *tta*, and groups of unaspirated consonants like *kkha*, *ttha*, etc., are expressed by the second element alone, except in the case of two nasals of the same class, where the first may be optionally expressed by the *anusvāra* as in *aṁña* or *aña*. Three times, however, a double *ma* is used in the word *samma* (*samyak-pratipatti*).

(2) Groups of dissimilar consonants are expressed by ligatures of the signs, except if the first is a nasal for which the *ạnusvāra* is used throughout.

(3) In the ligatures the sign for the consonants, to be pronounced first, stands above and the next is interlaced with the lower end of the first, except in the case of groups with *ra*, where *ra* is almost invariably placed below. The forms of the Kharoshthi ligatures are shaped exactly like those of the Brahmi and, like these, illustrations of the grammatical term *saṁyuktākṣara* ' a conjunct syllable '. The neglect of non-aspirates, preceding aspirates, and of the double consonants, with the exception of the nasals, which can be marked without trouble by the *anusvāra*, is, as already pointed out, a clerk's trick and the same as that used in the Brahmi lipi of the Prakrit inscriptions. The treatment of *ra* in groups is closely analogous to that adopted in Girnar, where this letter or its cursive representative always occupies the same position, whether it must be pronounced before or after the consonant with which it is combined. There is, however, this difference that in the Girnar Brahmi *ra* stands always at the top and in the Kharoshthi invariably at the foot. The one writes *e.g. rta* for *rta* and *tra*, and the other *tra*, both for *rta* and *tra*."

44. The comparison of the Aramaic and Kharoshthi alphabets shows " some letters, as *da*, *ka* and *ta*, to be closely connected with Mesopotamian forms, which *a priori* might be expected to have been used by the writers of the Satraps, ruling over the extreme east of the Persian empire. If the ruins of the eastern Persian provinces are ever scientifically explored and ancient Aramaic inscriptions are found there, forms much closer to the Kharoshthi will no doubt turn up." " . . . the Kharoshthi did exist in India during the Akhemenian times and did not originate after the fall of the empire. At the same time we learn that before 331 B.C. the Kharoshthi and the Brāhma letters were used together in the Punjab, just as was the case in the 3rd and 2nd centuries B.C."

Brahmi : Real old Indian Alphabet

45. Bühler has concluded that the Brahmi is the alphabet of the pandits and the Kharoshthi a script of the clerks and men of business. He admits that the Brahmi lipi had had a long history in India before king Piyadasi Asoka caused his Edicts to be incised in the various provinces of his large empire. " The Brahmi lip is the real old Indian alphabet which was popularly used in the third century B.C. all over India and that it was fully developed before the introduction of the Kharoshthi whence we may infer that it is the writing which the Buddhist canonical works mention so frequently."[40]

This complete alphabet, which was evidently worked out by learned Brāhmaṇs on phonetic principles, must have existed by 500 B.C., according to the strong arguments adduced by Professor Bühler. Macdonell says : This is the alphabet which is recognised in Panini's great Sanskrit grammar. It not only represents all the sounds of the Sanskrit language, but is arranged on a thoroughly scientific method, the simple vowels (short and long) coming first, then the diphthongs, and lastly the consonants in uniform groups according to the organs of speech with which they are pronounced. Thus the dental consonants appear together as *t*, *th*, *d*, *dh*, *n*, and the labials as *p*, *ph*, *b*, *bh*, *m*. Macdonell adds : " We Europeans, on the other hand, 2,500 years later, and in a scientific age, still employ an alphabet which is not only inadequate to represent all the sounds of our languages, but even preserve the random order in which vowels and consonants are jumbled up as they were in the Greek adaptation of the primitive Semitic arrangement of 3000 years ago.[41]

The Forms of Brahmi Graphemes : Maheśvari Sutras

46. It is traditionally believed that signs for writing of the Vedas were

given by Shiva (*Māheśvara*). The crescent marks were created by the striking of his Trinklet (*Damru*),[42] the old seers developed the *varṇas* for writing the Vedic hymns.

"अइउण् । ऋऌक् । एओङ् । ऐऔच । हयवरट् । लण् । ञमङणनम् । झभञ् । घढधष् । जबगडदश् । खफछठथचटतव् । कपय । शषसर् । हल् । इति माहेश्वराणि सूत्राण्यणादि संज्ञार्थानि"

47. The *Māheśvari Sūtras* classifiy the *varṇas* on graphemic basis. The original *Māheśvari* letters are *Vedic* (आम्नाय) and *ancient* (प्रोक्तं). According to Patanjali[43] scientific basis for correct pronunciation of the graphemes was provided by the classified *Māheśvari Sūtras*.

Devanāgarī	*Mahesvari*	*Roman Transliteration*
अ इ उ (ण्)		*a, i, u,*
ऋ ऌ (क्)		*r, l,*
ए ओ (ङ्)		*e, o,*
ऐ औ (च्)		*ai, au,*
ह य व र (ट्)		*h, y, v, r,*
ल (ण्)		*l,*
ञ म ङ ण न (म्)		*ñ, m, ṅ, ṇ, n,*
झ भ (ञ्)		*jh, bh,*
घ ढ ध (ष्)		*gh, ḍh, dh,*
ज ब ग ड द (श्)		*j, b, g, ḍ, d,*
ख फ छ ठ थ (व्)		*kh, ph, ch, ṭh, th*
च ट त क प (य्)		*c, ṭ, t, k, p,*
श ष स (र्)		*ś, ṣ, s,*
ह (ल्)		*h,*

Fig. 7. **Reconstruction of the Mahesvari Graphemes by A. B. Walawalkar.**

Table 2: **Mahesvari Sutras Classified**

Vedic	*Clarssfication*	*Text of Māhesvari Sutras*
शुद्ध स्वर :	Pure vowels	अ इ उ (ण्), ऋ ऌ (क्)
युक्तस्वर :	Joint vowels	ए ओ (ङ्), ऐ औ (च्)
अर्धस्वर :	Semi vowels	ह य व र (ट्), ल (ण्)
अनुनासिक	Nasals	ञ म ङ ण न (म्)
सघोष महाप्राण	Voiced aspirates	झ भ (ञ्), घ ढ ध (ष्)
सघोष अल्पप्राण	Voiced unaspirates	ज ब ग ड द (श्)
अघोष महाप्राण	Voiceless aspirates	ख फ छ ठ थ (व्)
अघोष अल्पप्राण	Voiceless unaspirates	च ट त क प (य्)
ऊष्माण, इत्यादि	Sibilants etc.	श ष स (र्) ह (ल्)

Phonetic Order in Panini-sutras

48. In the Panini Sūtras, Sanskrit phonemes expressed in the Brahmi script, are arranged in physio-phonetic order :

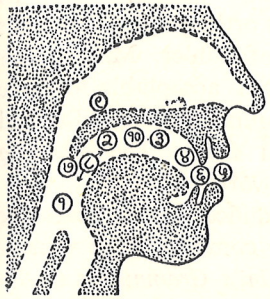


Fig. 8. **Section of mouth showing the speech organs**

1. कंठ्य—Gutturals (Velar).
2. तालव्य—Palatals.
3. मूर्धन्य—Lingual (Retroflex).
4. दन्त्य——Dental.
5. औष्ठ्य—Labials.
6. दन्त्यौष्ठ्य—Dento-labials.
7. जिह्वामूलीय——Introvert.
8. कंठतालव्य—Palato-Gutturals.
9. नासिक्य—Nasals.
10. ऊष्माण—Sibilants.

Table 3. : **Panini's Classification** [44*]

(1) Gutturals	अ कु ह विसर्जनीयानां कण्ठः ।।	(क वर्ग Velar ; ह Glottal)
(2) Palatals	इ चु य शा नां तालु ।।	(च छ ज झ Affricates ;) (च् छ् ज् झ् Alvelar)
(3) Linguals	ऋ टु र षा णां मूर्धा ।।	(Retroflex)

* *See* notes on Panini I. 1. 9. Annexure B, pp. 55-58.

(4) Dentals	ऌ तु ल सा नां दन्ताः ॥
(5) Labials	उ पू पध्मानीयानाम् ओष्ठौ ॥ (Labials)
(6) Nasals	ञ म ङ ण ना नां नासिका च ॥
(7) Palato-gutturals	ए दै तोः कंठ तालु ॥
(8) Labio-gutturals	ओ दौ तोः कंठोष्ठम् ॥
(9) Dento-labial	व कारस्य दंतोष्ठम् ॥
(10) Introvert	जिह्वामूलीयस्य (ळ ड़) जिह्वामूलम् ॥
(11) Nasaliation	नासिकाऽनुस्वारस्य ॥
(12) Semi-vowel liquids	य र ल व अंतस्थाः ॥
(13) Sibilants	श ष स ह ऊष्माणाः
(14) Later addition	ळ क्ष ज्ञ श्र त्र संयुक्ताः ॥

Weber on Panini's Grammar

49. The script is analysed above as vehicle of writing within the framework of the phonemics of Sanskrit and its orthography. Panini's classification dates to 800 B.C. The speculations of Bühler, Max Müller and others, regarding the date of Panini, are not acceptable to some scholars. Goldstücker is of the opinion that Panini is pre-Buddha and his opinion is endorsed by Pandit Gaurishankar Ojha. The following words of Weber on the work of Panini are noteworthy :

"We pass at once into the magnificent edifice which bears the name of Panini as its architect, and which justly commands the wonder and admiration of everyone who enters. *Pāṇini's Grammar* is distinguished above all similar works of other countries, partly by its thoroughly exhaustive investigation of the roots of the language and the formation of words; partly by its sharp precision of expression, which indicates with an enigmatical succinctness whether forms come under the same or different rules. This is rendered possible by the employment of an algebraic terminology of arbitrary contrivance the several parts by which stand to each other in the closest harmony and which by the very fact of its sufficing for all the phenomena which the language presents, bespeaks at once the marvellous ingenuity of its inventor, and his profound penetration of the entire material of the language."[45]

Brahmi Graphemes in the Vedic Literature

50. Pandit Gaurishankar Ojha has listed 64 *Varṇas* used in the Vedas. The list is reproduced below to facilitate comparison with the graphemes of the *Maheśwari Sutras*.

Vowels	ह्रस्व	: अ	इ	उ	ऋ	ऌ	
	दीर्घ	: आ	ई	ऊ	ॠ	–	
	प्लुत	: आ३	ई३	ऊ३	ॠ३	–	
	संध्यक्षर	: ए	ऐ	ओ	औ		
	प्लुत	: ए३	ऐ३	ओ३	औ३		21
Ayogavah Anuswāra Visarga, Jehvāmulīya Upadhmanīya							4
Consonants स्पर्श	: क	ख	ग	घ	ङ		
	च	छ	ज	झ	ञ		
	ट	ठ	ड	ढ	ण		
	ड़	ढ़	ळ	ळ्ह	–		
	त	थ	द	ध	न		
	प	फ	ब	भ	म		27
अन्तस्थ	: य	र	ल	व			4
उष्मन्	: श	ष	स	ह			4
यम	: कुं	खुं	गुं	घुं			4
							64

ANNEXURE B

PAṆINI : VYĀKARAṆA SŪTRAS*

वृद्धिरादैच् ॥ १ ॥

1. आ, ऐ and औ are called *vriddhi*.

[आङ्गः 'bodily' from अङ्ग 'body', ऐच्छिकः 'optional' from इच्छा : 'option', औपगवः 'the son of Upagu' from the word उपगुः 'meaning a sage called Upagu'.]

अदेङ् गुणः ॥ २ ॥

2. अ, ए and ओ are called *guna*.

[अर्त्ति 'he moves, ; एति 'he comes' ओखति 'he goes'.]

इको गुणवृद्धी ॥ ३ ॥

3. In the absence of any special rule, whenever *guna* or *vriddhi* is enjoined about any expression by using the terms *guna* or *vriddhi*, it is to be understood to come in the room of the *ik* vowels only (i, u, *ri*, and *li* long and short) of that expression.

[The guna of इ or ई is ए; of उ, or ऊ, is ओ, of ऋ or ॠ is अर्, of ऌ is अल्; and their Vriddhi is ऐ, औ, आर् and आल् respectively. Thus नी+अति – ने+अति=नयति he leads.]

न धातुलोप आर्द्धधातुके ॥ ४ ॥

4. The *Guna* and *vriddhi* substitutions, which otherwise would have presented themselves, do not take place, when such an *ārdhadhātuka* (III. 4. 114) affix follows, which causes a portion of the root to be clided.

क्ङिति च ॥ ५ ॥

5. And that, which otherwise would have caused *guna* or *vriddhi*, does not do so, when it has an indicatory क् ग् or ङ्.

दीधी वेवीटाम् ॥ ६ ॥

6. The *guna* and *vriddhi* substitutions, which would otherwise have presented themselves, do not however come, in the place of the vowels of dīdhī 'to shine,' and vevī 'to go,' and of the augment called इट्.

हलोऽनन्तराः संयोगः ॥ ७ ॥

7. Consonants unseparated by a vowel are called conjunct consonants.

मुखनासिकावचनोऽनुनासिकः ॥ ८ ॥

8. That which is pronounced by the nose along with the mouth is called *Anunāsika* or nasal.

**Astādhyāyi of Pāṇinī :* Shri Chandra Vasu, Banaras, 1897.

[A letter partially uttered by the nose and partially by the mouth would be called—*anunāsika*.... The pure nasal is *anusvāra* while *anunāsikas* are different from this, in as much as that in pronouncing these, the breath passes through the nose and the mouth.

The vowels are generally so nasalised. 'If, instead of emitting the vowel sound freely through the mouth, we allow the velum pendulum to drop and the air to vibrate through the cavities which connect the nose with the pharynx, we hear the nasal vowels (*anunāsika*).' Thus अँ आँ. In the Vedas, the particle आङ् is *anunāsika*. As अभ्र आँ अपः (Rg-veda. V. 48. I).

The consonants ङ, ञ, ण, न and म are also *anunāsika*. Thus ङ is pronounced by the throat along with the nose, ञ by the palate and nose, ण by the upper palate and nose ; न by the teeth and nose, and म by the lip and nose.

The semi-vowels य, व and ल are also nasalised and are then called *anunāsika*. The term *anunāsika* is used in *sūtra* V. 1. 126 &c.

Why have we used the word " by the mouth " ? This definition will not include *anusvāra* or the pure nasal, which is pronounced wholly through the nose. Why have we used the word " by the nose " ? In order to exclude the consonants क, च, ट, त, प &c., which are pronounced wholly and solely through the mouth.]

तुल्यास्यप्रयत्नं सवर्णम् ॥ ९ ॥

वार्तिकम् ॥ ऋकारलृकारयोः सवर्णसंज्ञा वक्तव्या ॥

9. Those whose place of utterance and effort are equal are called *savārṇa* or homogeneous letters.

[The आस्य or places or portions of the mouth by contact with which various sounds are formed are chiefly the following :—(1) कण्ठ throat, (2) तालु palate, (3) मुर्द्धा head, (4) दन्ताः teeth, (5) ओष्ठौ lips, (6) नासिका nose.

The प्रयत्नम् or quality or effort is of two sorts primarily, आभ्यन्तरः 'internal' and बाह्य 'external' The first is again sub-divided into five parts :—

(1) स्पृष्टम् or complete contact of the organs. The twenty-five letters from क to म belong to this class. In pronouncing these there is a complete contact of the root of the tongue with the various places, such as throat, palate, dome of the palate, teeth and lip.

(2) ईषत्स्पृष्टम् or slight contact. The letters य, र, ल, व belong to this class of contacts. " In pronouncing these semi-vowels the two organs, the active and passive, which are necessary for the production of all consonantal noises, are not allowed to touch each other, but only to approach."

(3) विवृतं or complete opening. The vowels belong to this class.

(4) ईषद् विवृतं or slight opening. The letters श, ष, स, ह belong to this class. Some however place the vowels and श &c., into one group and call them all *vivṛita*.

(5) संवृतम् or contracted. In actual use, the organ in the enunciation of the short अ is contracted but it is considered to be open only, as in the case of the other vowels, when the vowel अ is in the state of taking part in some operation of grammar.

The *ābhyantara prayatna* is the mode of articulation preparatory to the utterance of the sound, the *bāhya-prayatna* is the mode of articulation at the close of the utterance of the sound.

The division of letters according to *ābhyantara prayatna* has been already given. By that we get (1) the *sparsa* or mute letters, (2) the *antastha* or intermediate between *sparsas* and *ushmans*, or semi-vowel or liquid letters, (3) the *svaras* or vowels or *vivṛita* letters, (4) the *ushmans* or sibilants or flatus letters.

The division of letters according to *bāhya prayatna* gives us (1) *surds* or *aghosha* letters, (2) sonants or *ghosha* letters. The *aghosha* are also called *svāsa* letters, the *ghoshas* are called *nāda* letters.

The second division of letters according to *bāhya prayatna* is into : (1) Aspirated (*mahāprāna*). (2) Unaspirated (*alpaprāna*).

The vowel अ has eighteen forms. The *acute* अ (*udātta*), *grave* अ (*antudātta*) and circumflexed (*svarita*). Each one of these three may be nasalised (*anunāsika*) or not (*niranunāsika*).

Then lastly every one of these six may be short, long, or prolated. Thus: अ, अ̱, अं, अँ, अ̱ँ, अ̱ं, आ, आ̱, आं, आँ, आ̱ँ, आ̱ं, अ३, अ̱३, अ३, अ३, अ̱ँ३, अ̱ं३.

Similarly the letters इ, उ and ऋ have also eighteen forms. The letter ऌ has no long form ; it has therefore twelve modifications. The diphthongs have no short forms, they have, therefore, only twelve forms. The *antastha* or semi-vowels with the exception of र have two forms each, *viz.*, nasalised and un-nasalised. The semi-vowels have no homogeneous letters corresponding to them. All letters of a *varga* or ' class ' are homogeneous to each other.

Thus then the homogeneous or *savarṇa* letters must satisfy two conditions before they could be called *savarṇa*. First, their place of pronunciation or आस्य must be the same. Secondly their प्रयत्न or quality must be equal. If one condition be present and the other be absent, there can be no *savarṇa*-hood. Thus च and श are both palatals, their आस्य or place of pronunciation being तालु 'palate' but still they are not *savarṇa*,

because their प्रयत्न is different, the प्रयत्न of च being *sprishṭa* and that of श being *vivṛita*.

Similarly क and च though their प्रयत्न is the same, *i.e.*, *sprishṭa*, yet their आस्य being different, one being guttural and the other palatal, are not *savarṇa*.

There is exception to this rule in the case of ऋ and ऌ, which though having different आस्य are still called *savarṇa* by virtue of the *Vārttika* of Kātyāyana; "the homogeneousness of ऋ and ऌ, one with another, should be stated." Thus होतृ + ऌकारः = होतॄकारः ; here ऋ and ऌ have coalesced into long ॠ by rules of *sandhi*, on the assumption that they are *savarṇa* letters.

The word *savarṇa* occurs in *sūtras* like अकः सवर्णे दीर्घ : (VI. 1. 101).

Why do we say "the place of pronunciation"? So that there may not be homogeneous relationship between क च ट त and प whose *prayatna* is the same but whose *āsya* is different. What is the harm if we make them *savarṇa*? Then in words like तर्मा and तर्मुन्, the प would be elided, if it be held homogeneous with त, by VIII.4.65, "there is optional elision of झर्, preceded by a consonant, when a homogeneous झर् follows."

Why do we say effort? That there may be no homogeneity between इ and the palatals, and य and श, whose organ of pronunciation is the same, but whose *prayatna* is different. What harm if it be so? Then in अरुश्च्योतति, the श would be elided before च by the rule already referred to, VIII.4.65.]

नाज् झलौ ॥ १० ॥

10. There is however no homogeneity between vowels and consonants, though their place and effort be equal.

[This *sūtra* lays down an exception to the former *sūtra*. There can be no homogeneity or *savarṇa* relationship between vowels and consonants, though their आस्य and प्रयत्न may be the same. Thus इ and श have the same आस्य namely तालु 'palate', and the same प्रयत्न namely *vivṛita*, but still they are not to be called *savarṇa*.]

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39. *Ibid*, pp. 111-113. 40. *Ibid*, pp. 35-36.

41. Macdonell, Arthur A., *A History of Sanskrit Literature*, London, 1928, p. 17.

42. ताण्डव नृत्य समये महेश्वरस्य डमरो: सकाशादुत्पन्ना नीत्यर्थ:। Ramchandra Bhikaji Gunjikar, in his comments on ' **माहेश्वराणी** ' in ' संज्ञाप्रकरणम् ', Shri Varadaraj Pandit, *Laghu-Siddhānta-Kaumudi*, Nirnaya-sagar Press. Bombay, p. 1.

43. " अथ किमर्थो वर्णानामुपदेश:। **वृत्तिसमवायार्थ उपदेशः ॥**
वृत्तिसमवायार्थो वर्णानामुपदेश : कर्तव्या :॥ कापुनर्वृत्ती :।
शास्त्र प्रवृति :। अथ क : समवाय :। वर्णानामानुपूर्व्येण संनिवेश :। अथ क उपदेशः। उच्चारणम्।; *Vyākarṇa Mahābhāsya*, Patanjali (Deccan Education Society), Poona, 1939, p. 28.

44. *Laghu Siddhānta-Kaumudi*, Nirnaya-sagar, Press, Bombay, 1948, p. 3.

45. Weber, Albrecht, *The History of Indian Literature*, Translated by John Mann and Theodor Zachariae, London, 1882, p. 216.

Inscriptions in Indus-script, Brahmi and Kharoshthi

(Chapter II : Plates 16 to 30)

H 96

M I C 15

M I C 19

M I C 46

M I C 93

M I C 333

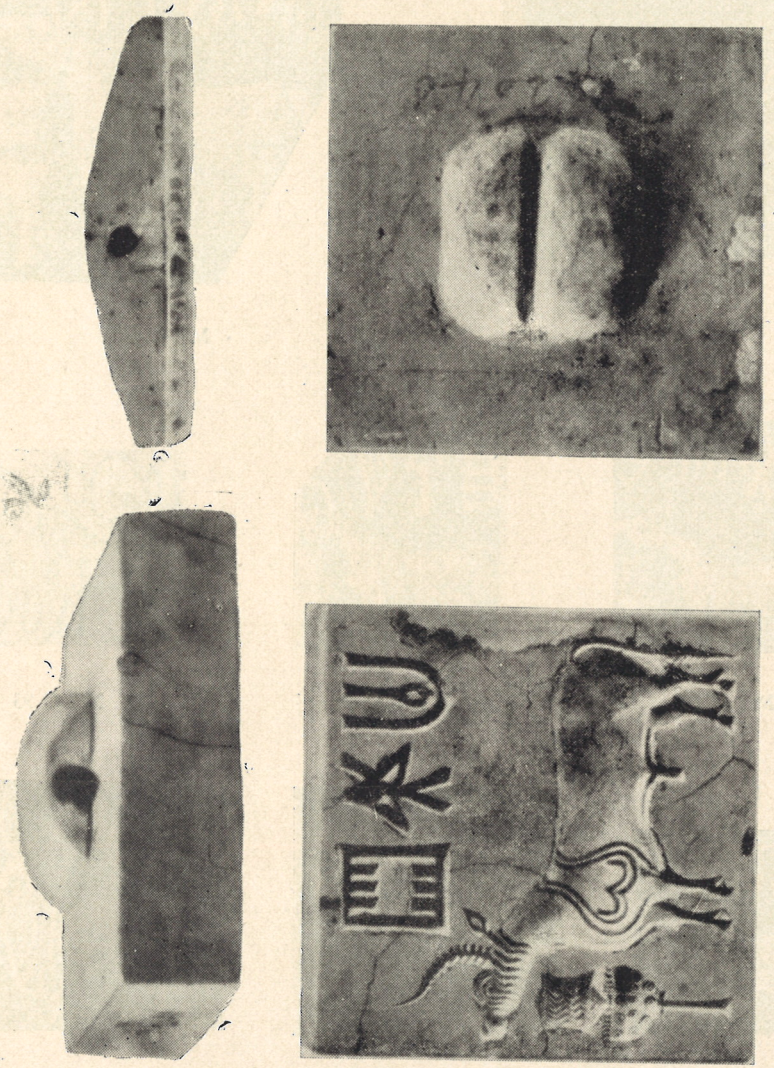
M I C 337

M I C 339

urtesy : Marshall. *Indus Valley* etc.,

Indus Valley Seals

PLATE 16



Indus Valley Seals

PLATE 17

Indian Coins with the various forms of the ' Chaitya Symbol '.

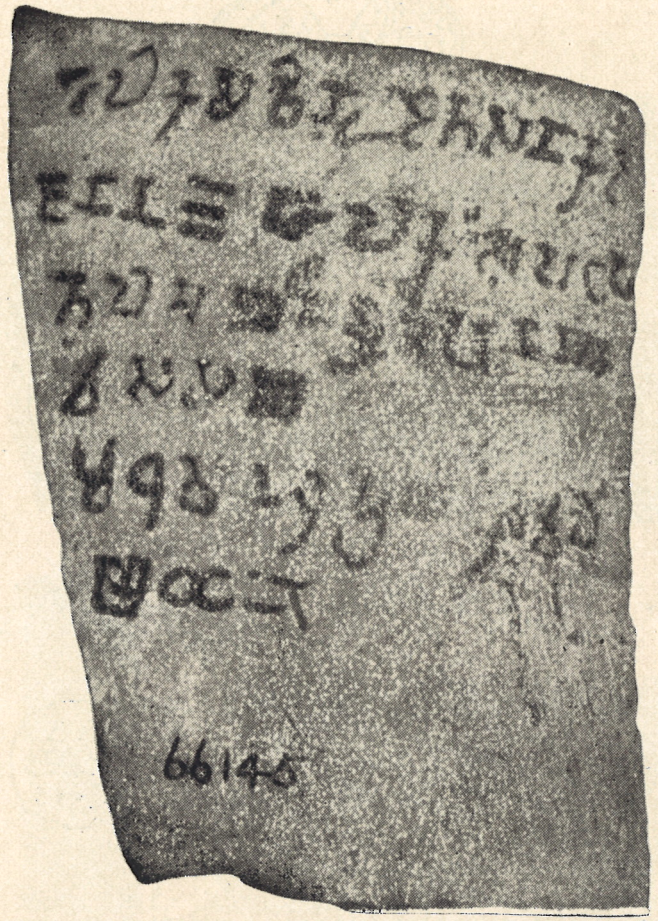
Nos. 1, 2 & 3 : Saurashtra Coin Nos. 14, 4 and 22, *Indian Antiquities*, Vol. II, plate XXXVII, *facing page* 85.

Nos. 4, 5 & 6 : Hindu Coins Nos. 1, 2 and 4 from *Behat* group *Indian Antiquities*, Vol. I, plate VII, *facing page* 113.

Nos. 7, 8 & 10: Hindu Coins Nos. 1, 2 and 8 from Behat near Scharanpur. *Indian Antiquities*, Vol. 1, plate IV, *facing page* 82.

No. 9: Hindu Coin No. 19 from Kanoj, *ibid.*

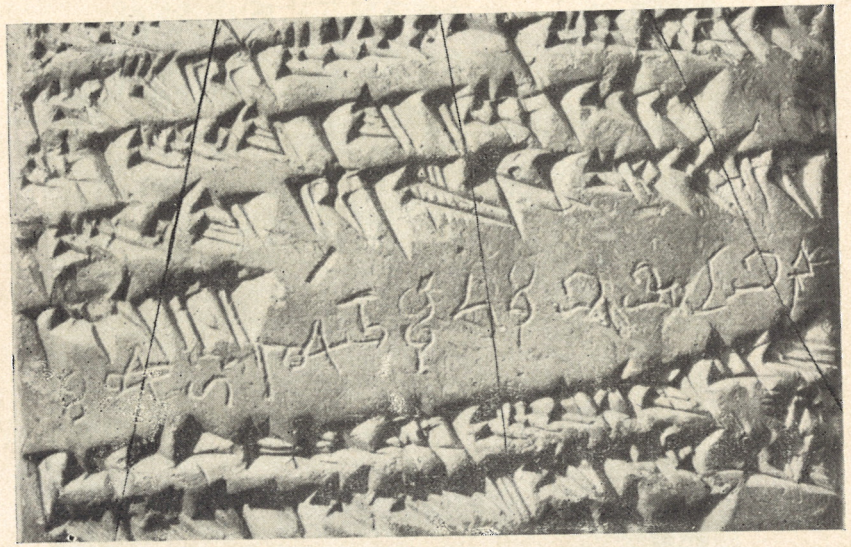
PLATE 18



(१) ओ लोकस विणू जेतस णाकस	Om of the men of Vishnujet of Naak
(२) ज नानु इंह लोकं सपए	who this world.....
(३) तेल·····पण	tel.....pan
(४) वंसस बा·····	of family
(५) मधुवन य अ·····वली	in sweet garden
(६) बाणउ	Merchant (*Bania*).

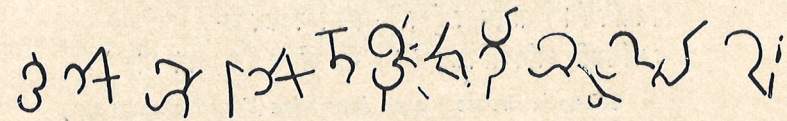
Note.—Brahmi writing on potsherd of a burial urn with epitaph of Vishnujit Na(y)ak (a merchant) found at Qossein on Red Sea; now deposited in the Egyptian Museum, Cairo, Hall of XI Dynasty. No. 29, Almirah No. 39 (*Courtesy* : Mr. Abdul Kadar Salim, Curator).

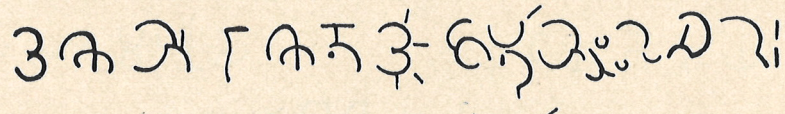
Brahmi writing (Second century A.D.)

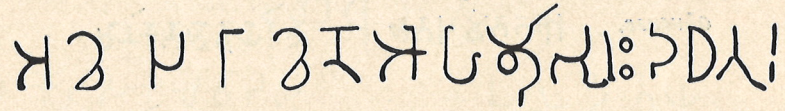


[British Museum No. 81.11.3. Published in the *Journal of the American Oriental Society*, 1936, Vol. 56, pp. 86-88]

अ खैझराखनो औहम्नुभ्यः ददतु ।

(*a*) 

(*b*) 

(*c*) 

(*d*) अखझनाखनोऔहम्नुभ्यःदधतु|

Babylonian Tablet with Brahmi Inscription (Fifth century B.C.)

[Deciphered by A. B. Walawalkar, *J.B.B.R.A.S.* 1954, Vol. XXXIX, 1, pp. 62-65].

[(a) Line drawing of the Tablet. (b) Rendering in Walawalkar's Pre-Asokan Brahmi. (c) Rendering in Asokan Brahmi. (d) Rendering in Early Nagari.]

सवतियन महमगन ससने मनवसिति -क-
द (।) सिलिमते वसगमे व एते द्वे कोठगलनि
निधवनि (।) माथुल-च [च] -मोदम-भलक्न छ-
ल कयियति अतियायिकय (।) नो गहिग (त) वय (॥)

(a) Sohagura Bronze Plaque Inscription (Fourth century B.C.)

obverse.

reverse.

Courtesy : J.B.B.R.A.S. Vol. XV.

सिरियजसातकनिस रञो गोतामिपुतस
चतुरपनसगोतमिपुतकुमारुयञसातकाणि

(b) Gotamiputra Yejna Sri Coin

Courtesy : Epi. Ind., Vol. XXI.

1. नेन [।] स [˙] वगिय [।] नं तल दन स] - । सप दिन । [सु] -
2. [म] ाते । सुलखिते पुडनगलते । ए [त] .
3. [नि] वहिपयिसति । संवागियानं [च] [दि] ने * *
4. [धा] नियं । निवसति । दग - तिया [f] यके * *
5. * * * [यि] कसि । सुअ - तियायिक [सि] पि । गंड [केहि
6. * * * [यि] केहि एस कोठागाले कोसं * * *
7. * * * *

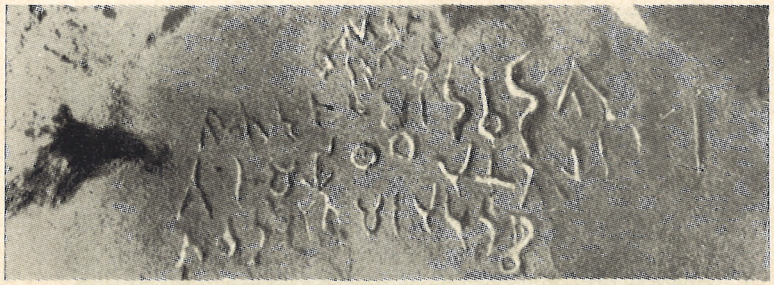
(a) Mahasthan Plaque Inscription. (Prakrit). (Third century B.C.)

1. 2. 3. 4. 5.

Courtesy : B.B.R.A.S. Vol. XV.

1 सतुमदनस = (शत्रुमदनस्य) = of Śatrumadana
2 दताय भेमिय = (दत्ता या भैम्या) = of Data, the daughter of Bhima.
3 बधुय = (बध्वाः) = of Badhu
4 कोउस कलवाडस = (कोट्टस्य कलवाडस्य) = of Katavāda, a Kotta.
5 उगुदेवेय = (उग्रदेवायाः) = of Ugradevā.

(b) Vacala Hill Inscriptions at Sopara, Bombay (Second century B.C.)

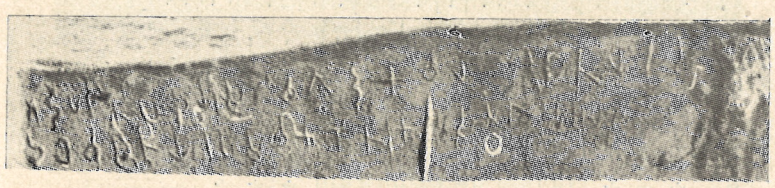


(a)

१ सुतनुक नाम
२ देवदाषीन्यी
३ सुंतनुक नाम देव दाषीन्यी

४ तम कामायीथ बालनाण्ये

५ देव दीना नाम लूपदसे

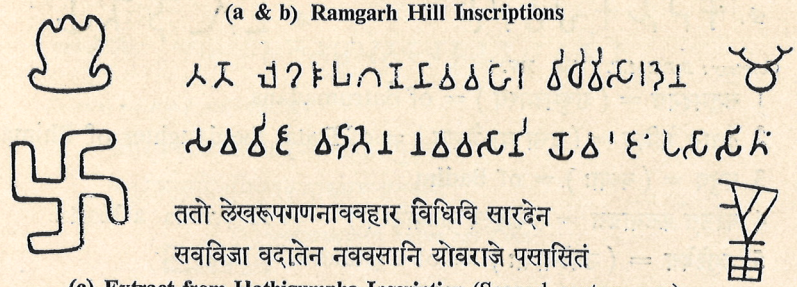


(b)

Courtesy : Corp. Ins. Ind., Vol. I.

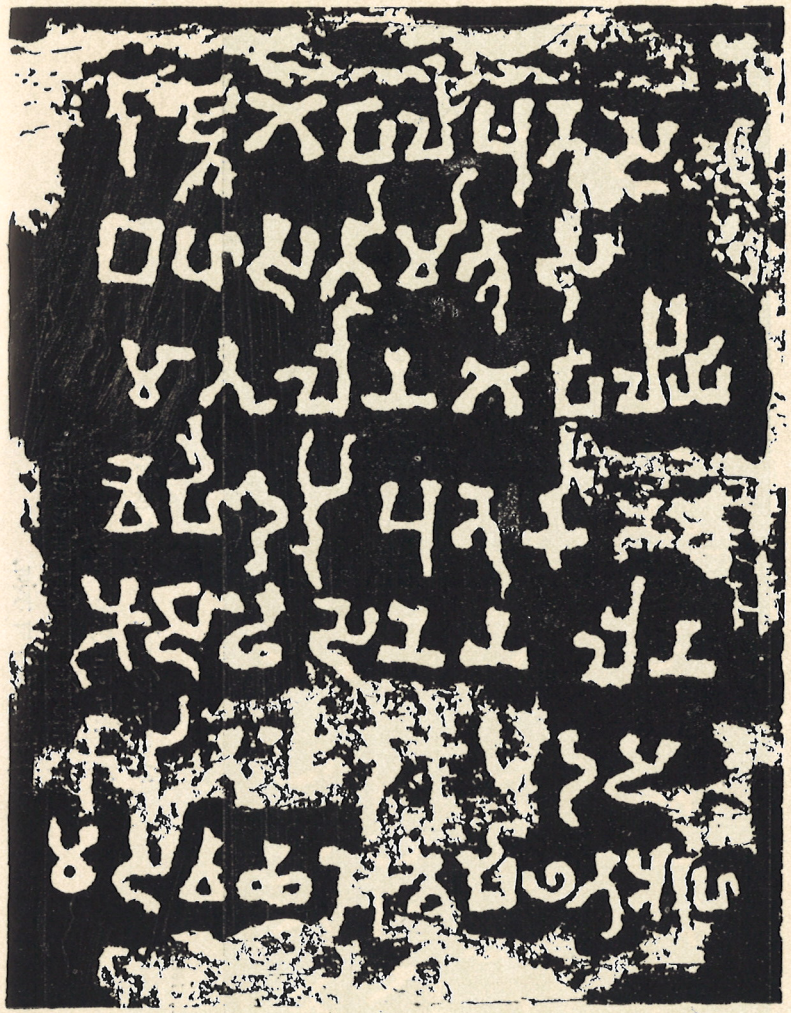
अदिपयन्ती हृदयम् सदा व गरक वयो च तयम
डुले वासंतिया हा सावानू भूते कुडस्टतम् एवम् आलंगी

(a & b) Ramgarh Hill Inscriptions



ततो लेखरूपगणनाववहार विधिवि सारदेन
सवविजा वदातेन नववसानि योवराजे पसासितं

(c) Extract from Hathigumpha Inscription (Second century B.C.)

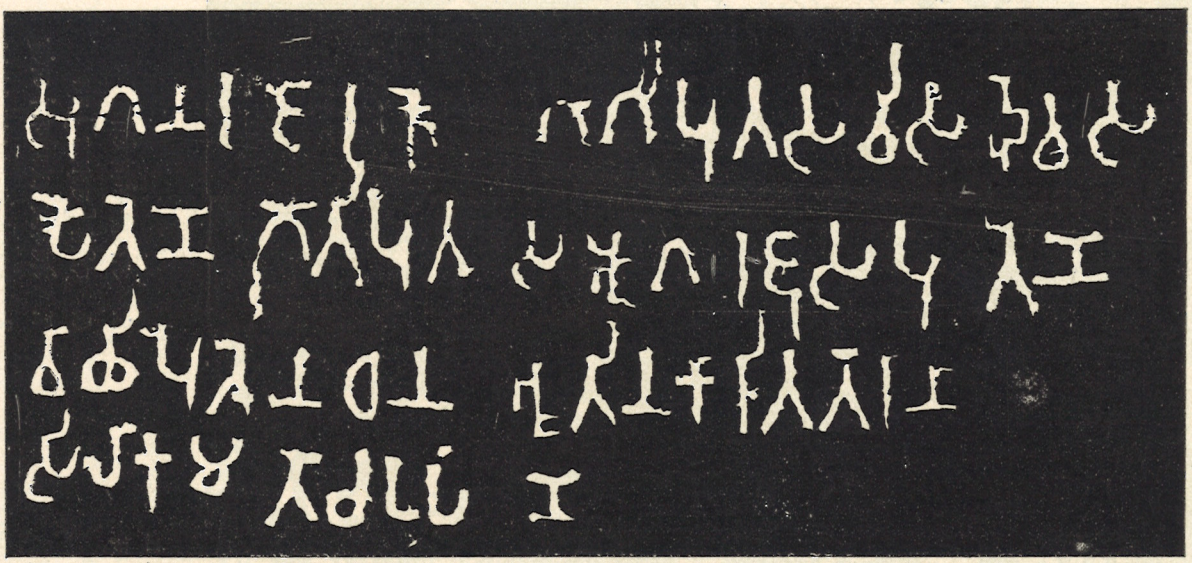


Courtesy : Epi. Ind., Vol. II.

1. राज्ञो गोपाली पुत्रस्य
2. बहसति मित्तस
3. मातुलेन गोपालीया
4. वैहिदरी पुत्रेन [आसा]
5. आसाढ सेनेन लेनं
6. करितं [उदाकस] दस
7. मेसवछरे कश्शपीयानं अरंह
8. [ता] नं .....

Pabhosa Inscription No. I, on rock outside the cave (Second century B.C.)

PLATE 25



Courtesy : Ind. Anti., 1885.

(१) सुगनं रजे रञो गागीपुतस विसदेवस
(२) पौतेण गोतिपुतस आगरजुस पुतेण
(३) वाछिपुतेन धनभूतिन कारितं तोरनां
(४) सिलाकंमंतो च उपंण.

Sunga Inscription of the Bharhut (Second century B.C.)

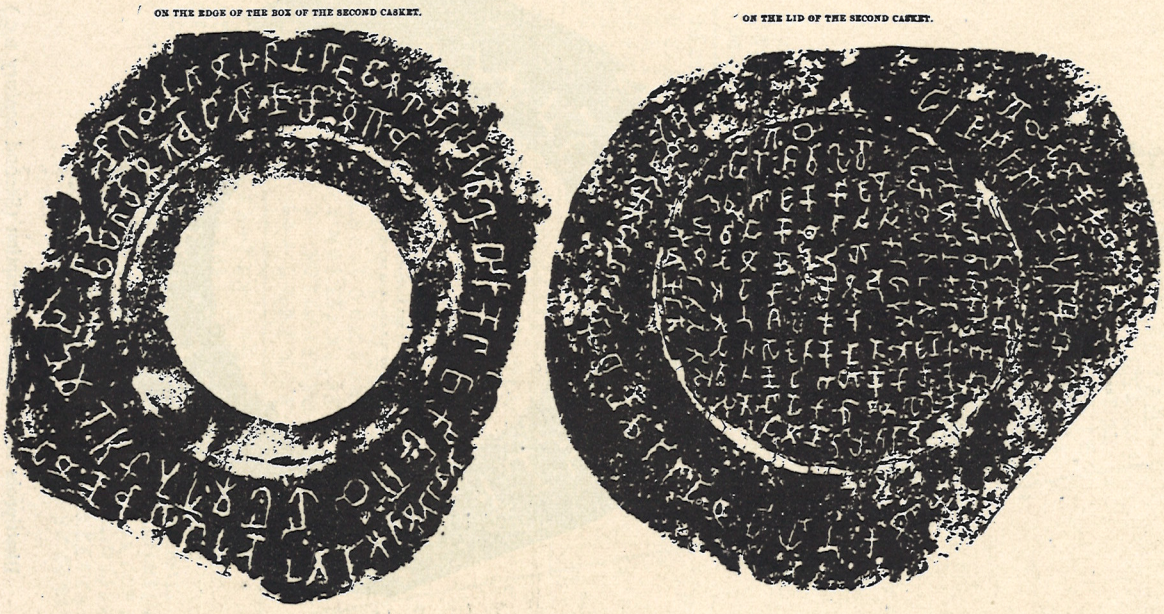
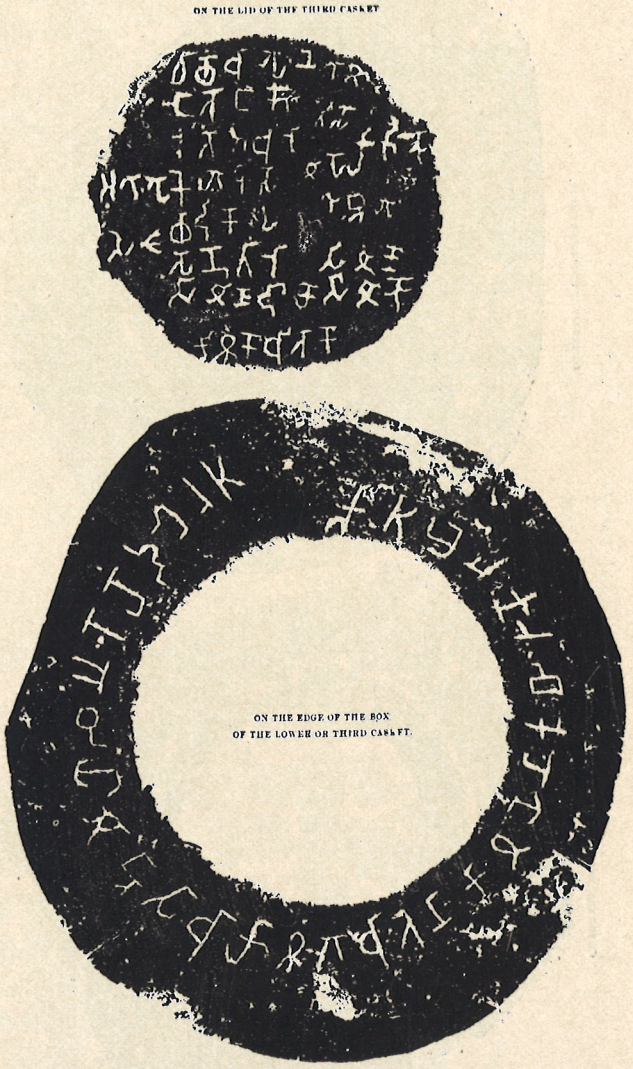


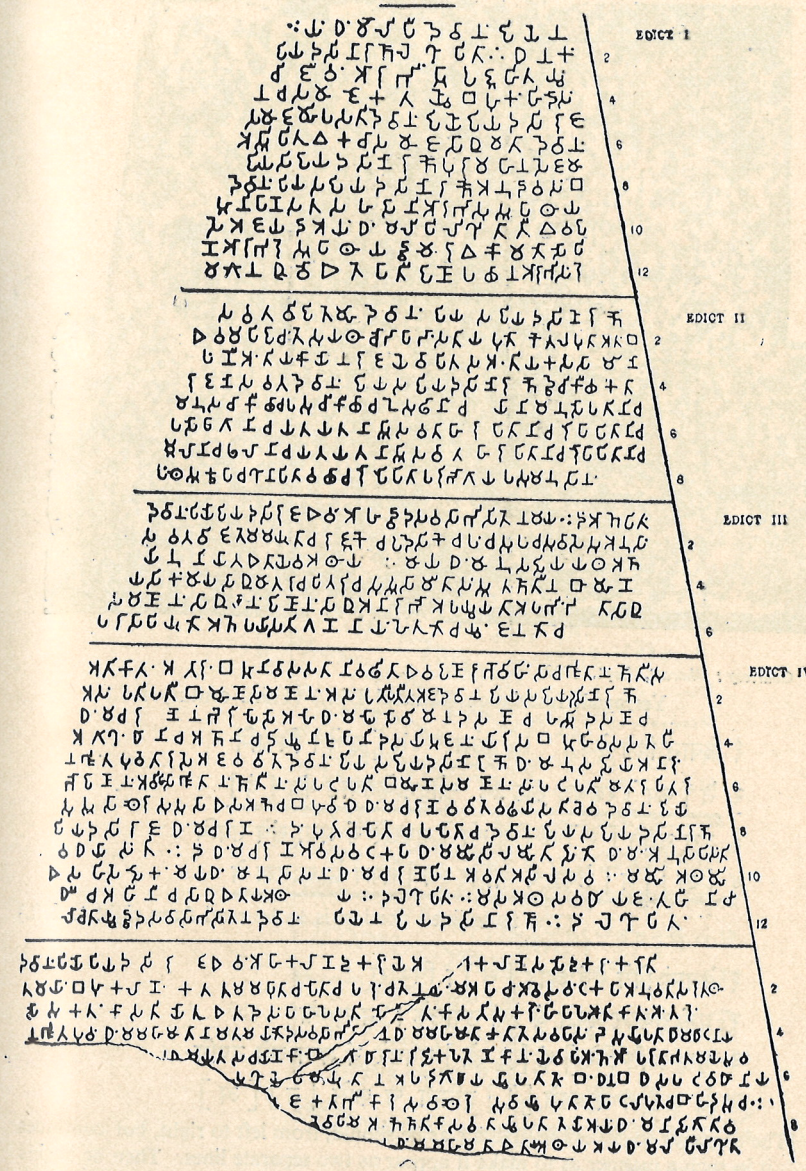
PLATE 26

Courtesy : Epi. Ind., Vol. II.

Bhattiprolu Relic Casket Inscription (Second century B.C.)

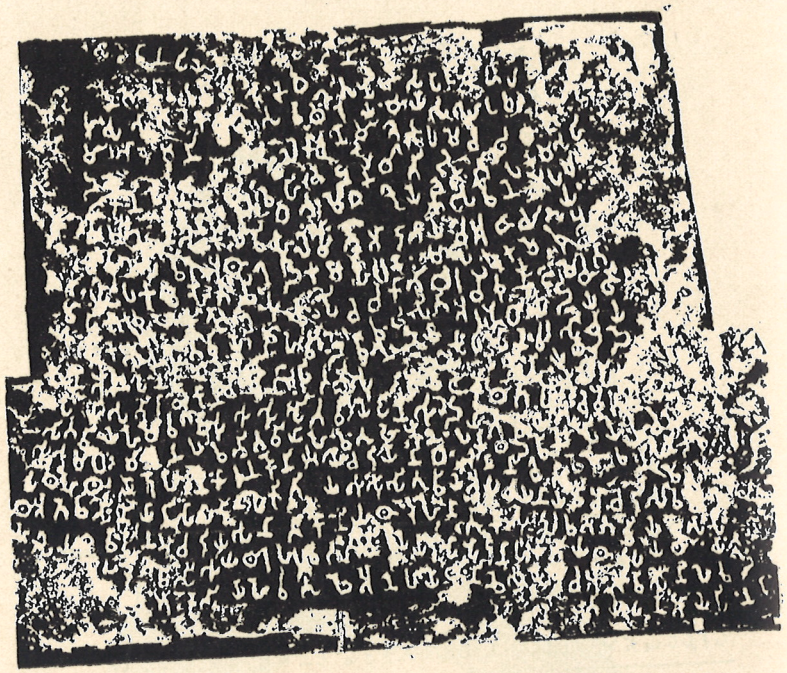


Bhattiprolu Relic Casket Inscription (Second century B.C.)



Courtesy : *Cor. Ins. Ind*, Vol. I.

Girnar Rock Edict Inscription of Asoka (Third century B.C.)



Courtesy: Bharati, Sept. 1929

Yerragudi Inscription (Karnool Dist.) (Third century B.C.)

१ देवानं पिये हेवं 1a हआ 1b [स] । धिकानि

२ ते [कप] रछवसं कंए 2a खोतुन केसपाउ कंह [यं]

३ हुस साति [रे] कं [तु खो] सवछरे यं मया संघे उपयि

४ [अ] [न] लेका च नामिइ [।] तेकप मे च ढबा ते

(The underlined portion is to be read from right to left.)

१ देवानं पिये हेवं आह [स] । धिकारी

२ एकं संवछर पकते यं हकं उपासके । न तु खो

३ हुस साति [रे] कं [तु खो] सवछरे यं मया संघे उपयि-

४ ते बाढ च मे पकते [।] इनिना च काले [न] [अ]

[The engraver engraves the first line as he should, from left to right, but continues it in such a manner as to make it appear as two separate lines. Then he begins to engrave from right to left and continues it in such a fashion as to make the left half of the second line a continuation of the first half of line 1. Sometimes he puts letters of one line into another, the characteristic of writing from right to left is an old trait of Brahmi. *Select Inscriptions*, p. 52, note 2.]

PLATE 29

Courtesy: Corp. Ins., Ind. Vol. 1,

H 5447—4B

Shahabazgarhi Inscription. (Front.)

PLATE 30]

CHAPTER III

ORIGIN OF THE BRAHMI SCRIPT

51. J. Prinsep (1799–1840) is the first epigraphist to decipher the Asokan inscriptions incised in Brahmi letters from left to right. The early European scholars identified the Indian script as Lath, Southern, Indian Pali, Indian and Maurya, while Bühler calls it Brāhma alphabet. Various theories have been brought up regarding the derivation of the Brahmi script, the important amongst them are enumerated below :

THEORIES OF ORIGIN OF BRAHMI

(1) Sir William Jones (1806)[1]—The Brahmi has semitic origin.

(2) Prof. Kopp (1821)[2]—The Indian alphabet had semitic origin.

(3) Prof. Lepsius (1835)[3]—All the Indian alphabets could be derived from the semitic.

(4) James Prinsep[4]—The oldest Greek was nothing more than Sanskrit turned topsy-turvy.

(5) Dr. Otfried Müller (1838)[5]—Greeks took their alphabet to India during the time of Alexander the Great.

(6) Prof. Benfey (1840)[6]—Phoenicians made a present of the alphabet to the Indians.

(7) Dr. Stephenson (1849)[7]—All Indian alphabets came from the Phoenician or from the Egyptian origin.

(8) Prof. A. Weber (1856)[8]—The Indian alphabet is derived from oldest Phoenician alphabet (Northern semitic).

(9) Edward Thomas (1858)[9]—Brahmi characters were borrowed by the Aryans from the Dravidians.

(10) Dr. Geisler (1859)[10]—South Asoka alphabet was derived from semitic.

(11) Christian Lassen (1867)[11]—The South Asoka alphabet is of indigenous origin.

(12) M. Lenormant (1872)[12]—The South Asoka alphabet sprang from Himyaritic.

(13) Dr. A. C. Burnell (1874)[13]—The Indian script is derived from semitic origin. The immediate source may be Phoenician, Himyaritic or Aramanean. It was introduced in India during fourth or fifth century B.C.

(14) Sir A. Cunningham (1876)[14]—The Indian-Pali alphabet invented by the people of India, is based on a system of indigenous hieroglyphyics.

(15) Dr. Decke (1877)[15]—The Indian alphabet descended from the Assyrian cuneiform characters through an ancient southern semitic alphabet.

(16) M. Emile Senart (1880)[16]—Asoka alphabet was of semitic origin.

(17) Dowson (1881)[17]—The Indian alphabet is of indigenous origin. Indians used letters during the *Sūtra* period.

(18) Dr. Isaac Taylor (1883)[18]—The Indian alphabet is derived from an alphabet of Southern Arabia from which the Himyaritic alphabet descended.

(19) R. N. Cust (1884)[19]—The Indian alphabet (which is semi-alphabetic) is a loan. It was imported from Arabia. It was derived by the Red-sea from the Himyarite development of the Phoenician alphabet. The idea of representing vowels and consonants by symbols was borrowed from Western Asia.

(20) M. J. Halevy (1885)[20]—The Indian alphabet is derived from Aramaic alphabet (8 consonants), Ariano-Pali or Kharoshhi (6 consonants, 2 initial vowels, medial vowels and the *anusvāra*) and Greek (five letters).

(21) R. B. Gunjikar (1892)[21]—The Indian alphabet was invented by a Grammarian. The letters were shaped on the outline pictures of the objects in common life to represent the sound at the beginning of their names.

(22) Georg Bühler (1894)[22]—The Brāhma letters were derived from old types of the north-semitic alphabet between the eighth and the fifth century B.C.

(23) Prof. Rhys Davids (1903)[23]—Brahmi alphabet is derived from Cuneiform script (pre-semitic writing used in the Euphrates Valley).

(24) R. Shamasastri (1906)[24]—Brahmi characters were derived from the hiereoglyphics described in the Tantric literature.

(25) David Diringer (1947)[25]—Brahmi script was invented by the Brahmins. The idea of the alphabet was taken from Aramaic alphabet. Shapes of some Brahmi signs resemble semitic letters.

(26) A. B. Walawalkar (1951)[26]—The original forms of the Brahmi letters were deliberately designed by Indians as phonograms.

The most important amongst the theories enumerated above are summarised in subsequent paragraphs.

James Prinsep on the Asoka Alphabet[27]

52. James Prinsep was the first orientalist to read Brahmi letters. He was making copies of the pillar inscriptions from Sanchi when he noticed repetition of two letters. He suspected them to mean (gift) (*dānam*) and thus recognised letters *d* and *n*. The next word deciphered by him was the preceding one ' Piyadasi '. In his article " Application of the Early Bhilsa Alphabet to the Buddhist Group of Coins," Prinsep says :

> There is a primitive simplicity in the form of every letter, which stamps it at once as the original type whereon the more complicated structure of the Sanskrit has been founded. If carefully analyzed, each member of the alphabet will be found to contain the element of the corresponding member, not only of the Devanágarí, but of the Kanauj, the Pálí, the Tibetan, the Hala Kanara, and of all the derivatives from the Sanskrit stock.
>
> But this is not all: simplification may be carried much farther by due attention to the structure of the alphabet, as it existed even at this early stage, and the genius of its construction, *ab initio*, may in some measure be recognized and appreciated.
>
> First, the aspirated letters appear to have been formed in most cases by doubling the simple characters; thus, ꤦ *chh* is the double of ꤤ *ch*; ꤬ *ṭh* is the double of ꤫ *ṭ*; ꤧ *dh* is the half of this; and ꤨ *th* is the same character with a dot as a distinguishing mark: (this may account for the constant interchange of the ꤫, ꤩ, ꤬, and ꤨ, in the inscriptions). Again: ꤦ *dh* is only the letter ꤥ produced from below—if doubled, it would have been confounded with another letter, the ꤦ. The aspirated *p* ꤪ is merely the ꤩ *p* with a slight mark, sometimes put on the outside, either right or left,[1] but I cannot yet affirm

that this mark may not merely denote a duplication of the letter rather than an aspiration—if, indeed, the terms were not originally equivalent; for we have just seen the doubling of the letter made to denote its aspiration.

The *kh* seems formed from the *g* rather than the *k*: the *gh* and *jh* are missing as in Tibetan, and appear to be supplied by *g* and *chh* respectively: *bh* is anomalous, or it has been formed from the *d* by adding a downward stroke.

Again, there is a remarkable analogy of form in the semi-vowels *r*, *ṛ*, *l*, *y*, , , , , which tends to prove their having been framed on a consistent principle: the first *r* hardly ever occurs in the Dihlí inscription, but it is common in that from Girnar. The *h* is but the reversed: the *ri*, so peculiar to the Sanskrit alphabet, is formed by adding the vowel *i* to the *r*, thus, .

As far as is yet known, there is only one *n*,[1] and one *s*: the nasals and sibilants had not therefore been yet separated into classes; for the written Pálí of 200 years later possesses at least the various *n*'s, though it has but one *s*.

The four vowels, initials, have been discovered, , , , ; *a*, *i*, *e*, *u*. The second seems to be the skeleton of the third, as if denoting the smallest possible vocal sound. Of the medial vowels it is needless to speak, as their agreement in system with the old Nágarí was long since pointed out. The two long vowels *í* and *ú*, are produced by doubling the short symbols. The *visarga* is of doubtful occurrence, but the *anuswára* is constantly employed;

1. "I think the Girnar and Ceylon inscriptions will be found to have the other nasals made by the modification of the primary . There are other letters in these texts not found in the Lath this side of India."

and when before *m*, as in *dhamma*, it is equivalent to the duplication employed in the more modern Pálí writing. The following, then, is our alphabet, arranged in the ordinary manner.

Gutturals		*k*	*kh*	*g*	*gh*	*ng*	क	ख	ग	घ	ङ
Palatals		*ch*	*chh*	*j*	*jh*	*ny*	च	छ	ज	झ	ञ
Cerebrals		*ṭ*	*ṭh*	*ḍ*	*ḍh*	*ṇ*	ट	ठ	ड	ढ	ण
Dentals		*t*	*th*	*d*	*dh*	*n*	त	थ	द	ध	न
Labials		*p*	*ph*	*b*	*bh*	*m*	प	फ	ब	भ	म
Semivowels, etc.		*y*	*r*	*l*	*v*	*s*	*h*	य	र	ल	व	स	ह
Vowels		*a*	*i*	*e*	*u*	*rĭ*	अ	इ	ए	उ	ऋ

We might, perhaps, on contemplation of these forms, go yet farther into speculation on their origin. Thus the *g* may be supposed to be formed of the two strokes of the *k*, differently disposed; the *j*, of the two half curves of the *ch* superposed; the two *d*'s[1] are the same letter turned right and left respectively; and this principle, it may be remarked, is to be met with in other scions of the Indian alphabet. Thus, in the Tibetan, the *z*, a sound unknown to the Sanskrit, is made by inverting the *j*; the cerebral *ṇ*, by inverting the dental *n*; and the cerebral *ṭ*, *ṭh*, by inversion of the dental *t th*.

The analogy between the and is not so great in this alphabet as in what we have imagined to be its successor, in which the essential part of the *t* is the placed downwards (). In the same manner, the connection of the labials, *p* and *b*, is more visible in the old Ceylonese, the Kanauj, and even the Tibetan alphabets;

1. "It is worth observing that the dental *d* of the inscriptions corresponds in form to the modern cerebral, and *vice versa*."

the ꣆ *b* being merely the ꣆ *p* closed at the top; and in square Pálí ᥆ and ᥅.

Thus, when we come to examine the matter critically, we are insensibly led to the reduction of the written characters to a comparatively small number of elements, as ꣇, ꣈, ꣉, ꣊, ꣋, ꣌, ꣍, ꣎, ꣏ and ꣐; besides the vowels ꣑, ꣒, ꣓. Or, perhaps, in lieu of this arrangement, it may be preferable to adopt one element as representative of each of the seven classes of letters. We shall thus come to the very position long ago advanced by Iambulus the traveller.

Iambulus, who is believed to have visited Ceylon, had stayed there for seven years has recorded that : " the characters are originally only seven, but by four varying forms or combinations they became twenty eight."

Similarity of Greek and Brahmi Alphabets[28]

53. Prinsep is of the opinion that " the alphabet which we possess, as used by the Buddhists of a couple of centuries later, was that in which their sacred works had been written by the contemporaries of Buddha himself who passed away in the year 543 B.C."* He further adds that "the Asoka alphabet agrees very closely with that of our Saurashtra coins which may thence be pronounced to be anterior to the Gupta series." Prinsep has published an article on " The Legends of the Saurashtra group of Coins Decyphered ". The coins were found at Mandavi and other towns in Saurashtra. In his comments Prinsep syas : " I cannot ...let pass the present opportunity of mentioning as a highly curious circumstance, the very great similarity between the old Sanskrit and the Greek character ".

(This) " striking uniformity becomes more palpable, the further we retire into antiquity, the older the monuments we have to decypher ; so that even now while we are quite green in the study, we might almost dare to advance (with the fear of M. Raoul Rochette before us) that the *oldest Greek* (*that written like the Phoenician from right to left*) *was nothing more than Sanskrit turned topsy-turvy*.† A startling proposition this for those who have so long implicitly believed in Cadmus and the

*James Prinsep, *J.A.S.B.* Vol. VII, 1838, p. 275. †Italics mine—Author.

from Egypt of what, perchance, never existed there. Yet, there is nothing very new nor very unnatural in the hypothesis; since the connection of the Greek with the Phoenician and Samarian alphabets has been admitted as strong evidence that the use of letters travelled progressively from Chaldea to Phoenicia and thence along the coasts of the Mediterranean, and the Greek language is now so indisputably proved to be but a branch of the Sanskrit stem, that it is not likely that it should have separated from its parent without carrying away some *germs of the art of writing, already perhaps brought to perfection by the followers of Brahmā*. But my arguments are not those of books or learning or even tradition, but solely of graphic similitude and ocular evidence."

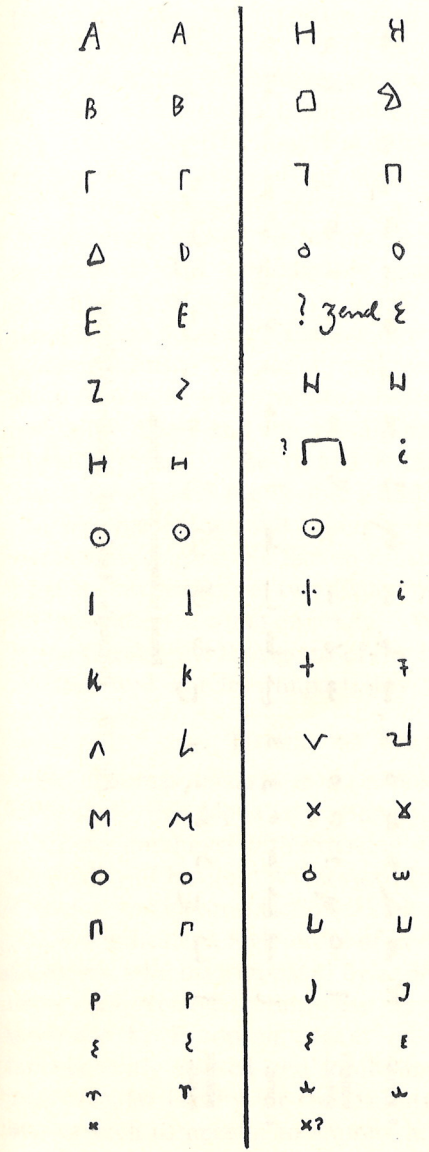
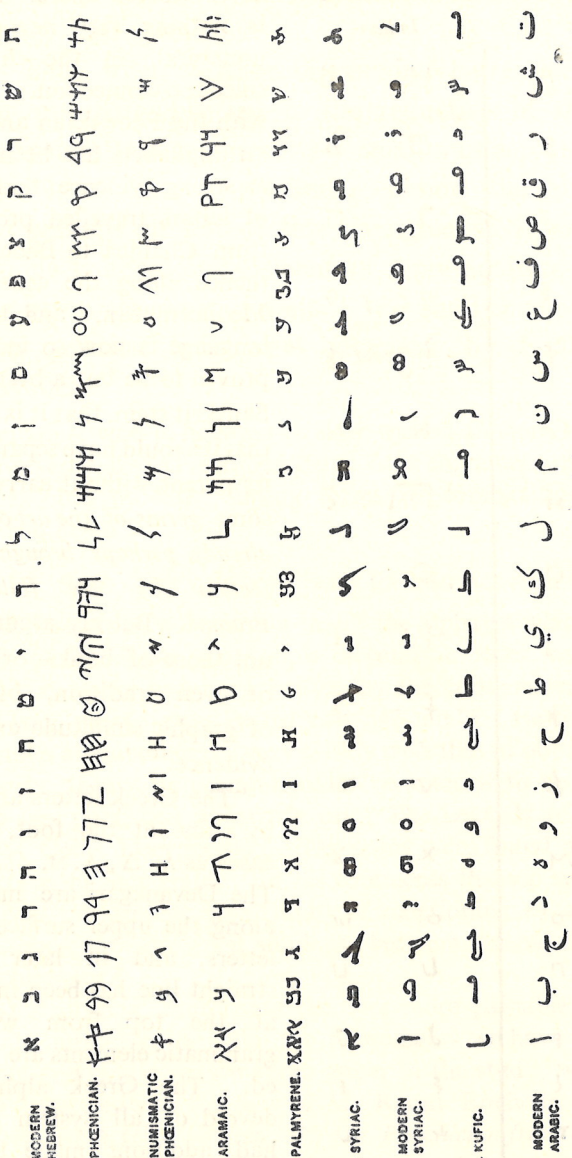


Fig. 9. **Comparison of Greek and Brahmi Alphabets.**

"The Greek letters are dressed by a line at the foot, in most cases as A, Δ, Λ, M, Ω, Υ, & c. The Devanagari are made even along the upper surface of the letters, and in later ages a straight line has been introduced at the top from which the grammatic elements are suspended. The Greek alphabet is devoid of all system and has had additions made to it at various times. Some of these, as ϕ, x, ψ, Ω are precisely those which present the least



Printed by Stephen Austin, Hertford.

Fig. 10. **Prinsep's Table of Semitic Alphabet**

resemblance to the Sanskrit forms. I give my evidence on Plate (Plate XXIV *J.A.S.B.* Vol. III), taking my Greek types from the well-formed letters on coins and from the *Boustrophedon* tablet of Sigeum."

"Of the vowles, A, I, O and Υ present a striking conformity with the vowels अ, इ, and the semi-vowels व and य of the oldest Sanskrit alphabets inverted. The vowel E is unconformable and resembles more the short ε of the *Zend*. The long H is a later introduction and appears to be merely the interation of the short vowel I as *w* is OO.

"In the consonants we find B, Γ Δ, Z. θ, K, Λ, M, N, π, P, Σ, T, in fact, every one of the letters excepting those of after-invention, are represented with considerable exactness by the ब (or double ब्ब), ग ध स थ क ल म न प र ज त of the oldest Sanskrit alphabet, although there is hardly a shadow of resemblance between any pair in their modern forms. The same precision cannot be expected in every case. The B,Δ, θ M, N, π P,y, require, like the vowels, to be viewed in an inverted position. The Γ and Μ remain unturned. The Z and K require to be partially turned. The Δ and N may be deemed a little far-fetched. The B taken from the double *v* and the Δ from the aspirated ध may also be objected to; but taking a comprehensive view of the whole, it seems to me impossible that so constant and so close a conformity of the alphabetical symbols of two distant nations should exist without affording demonstration of common origin. Whether the priority is to be conceded to the Greeks, the Pelasgians of the Hindus, is a question requiring great research and not less impartiality to determine."[28]

Thomas on Brahmi Alaphabet

54. Thomas remarks in an article[29] in the *Numismatic Chronicle* in 1863, that "this Alphabet possesses in an eminent degree the merit of simplicity combined with extended distinctive capabilities, and remarkable facility of lection : it is formed from a very limited number of literal elements, and its construction exhibits not only a definite purpose throughout, but indicates a high order of intellectual culture on the part of the designers, who discriminated by appropriate letters gradations of sounds often inappreciable to European ears, and seldom susceptible of correct utterance by European organs of speech. It clearly constituted an independently devised and locally-matured scheme of writing, adapted with singular facility for the exhibition of the language of the country and as such competent to express all needed in the ancient vernaculars equally as in its, but little changed, though mere cursive and elaborately combined, forms, it suffices for the present day for all the demands of the

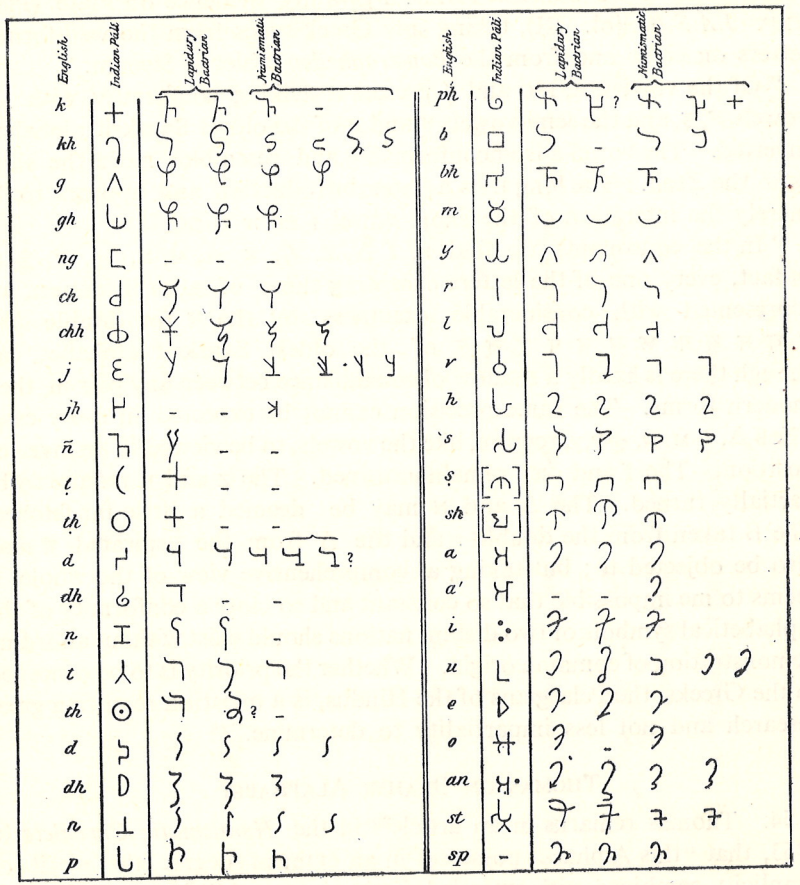


Fig. 11. **Comparison of Brahmi and Bactrian Alphabets**

introduction multifarious dialects." At a meeting of the Royal Asiatic Society (April 9th, 1866), Thomas propounded the theory, that the Aryans had never invented an alphabet, but were always indebted to the nationality, among whom they settled, for their knowledge of writing. He further added that the " Devanagari was appropriated to the expression of the Sanskrit language from the pre-existing Indian Pali or *Lat* alphabet, which was obviously originated to meet the requirements of Turanian (Dravidian) dialects."[30] This expression of opinion was communicated to the Bengal Asiatic Society, and the sbuject was discussed there again in 1867. In 1871, Thomas, in his paper, brought up the topic again, and affirmed his theory in a long argumentative note based upon an examination of the different letters of the alphabet.

Gunjikar on the Origin of Brahmi

55. Ramchandra Bhikaji Gunjikar[31] has put up a theory of hieroglyphic origin of the Indian alphabet in an article published in 1892. He says : " The inventor at first clearly arranged in his mind all the simple vowel and consonant sounds. He then proceeded to see and collect separately all Sanskrit words beginning with each of these simple sounds. He selected from each of the separate groups thus formed a single word that suited his purpose best, the chief condition of suitableness being, that the word selected should, without the least confusion, express the idea of plain and well defined article in common life. An orderly collection of the outline pictures of the articles represented by these single words formed the first Indian Alphabet.

Table 4. **Hieroglyphic origin of Brahmi.**

Brahmi	*Devanagari*	*Substitute word*	*Meaning*
𑀅	अ	अंकुश	goad
𑀇	इ	इल्वला	stars in the head of Orion
𑀉	उ	उत्संग	lap
𑀏	ए	एषणी	scale of a balance
𑀓	क	कबंध	headless trunk
𑀔	ख	खग	bird
𑀗	ग	गव्हर	cave
𑀘	घ	घटी	water-clock
𑀙	च	चमस	spoon
𑀚	छ	छत्र	parasol

Brahmi	*Devanagari*	*Substitute word*	*Meaning*
𑀚	ज	जघन	posteriors
𑀛	झ	झर	waterfall उत्सान्निर्गतो जलप्रवाहः।
𑀝	ट	टंकार	twang of a bow-string
𑀡	ड	डमरु	hourglass-shaped drum
𑀢	त	तर्कु	spindle
𑀤	द	दंष्ट्रा	lock-joint (दंतपांक्तिद्वयप्रांतस्था द्विगुणाकृता दंतावालः।)
𑀥	ध	धनुः	bow
𑀦	न	नर	pin of a sub-dial (छायाप्रमाण-ज्ञानोपयोगी शंकु :)
𑀧	प	पर्वन्	joint
𑀨	फ	फणा	hood of cobra
𑀩	ब	बंधनागार	prison
𑀪	भ	भद्रपीठ	royal seat
𑀫	म	मद्यसंधान	distiller's pot
𑀬	य	यंत्र	drag-hook
𑀭	र	रथ्या	street
𑀮	ल	लता	creeper
𑀯	व	वदर	berry
𑀰	श	शंकुला	nut-cracker
𑀲	स	सर्प	serpent
𑀳	ह	हस्तिशुंडा	elephant's trunk
𑀞	ठ*	doubling of ट	looks like Sun (ठकारः सूर्य मंडले)
𑀣	ढ*	,, ड	looks like dog's tail (शुनो लांगूल)
𑀱	ण*	,, न	looks like jewel (भूषण)
𑀣़	थ†	ठ with a dot	looks like fort (दुर्ग)
𑀵	ञ		looks like biforked root
𑀱	ष		Shows delivery of a child (षूङ्,) (प्राणिगर्भ विमोचनः।)
𑀁	ङ		Shows the mutual attraction between a sense and its object.

*The Brahmi signs for ठ, ढ and ण are constructed by doubling of the signs for ट, ड and न respectively.

†The sign for थ is constructed with the sign ठ with a dot in the centre.

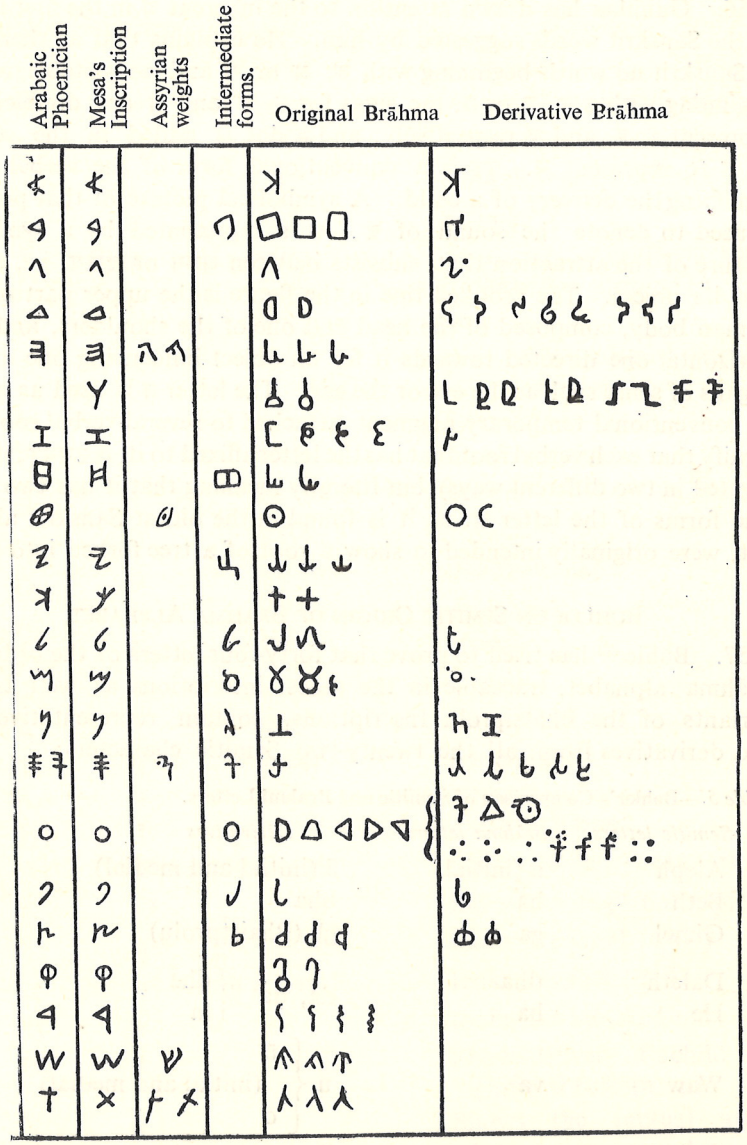
56. Gunjikar has drawn attention to the inherent अ in the first letter of the Sanskrit words suggested by him. He explains that as there are in Sanskrit no words beginning with ङ, ञ or ण and no suitable words beginning with ठ, ढ, थ or ष, the signs for ट, ड and न are doubled to represent ठ, ढ, and ण respectively; and a dot is added in the centre of ठ to represent थ. षूङ् is a conventional form of the verbal root signifying the delivery of a child. A symbolical picture of that process is used to denote the sound of ष. ङ is represented by a symbolic picture of the attraction that subsists between अङ्ग or इंद्रिय, i.e. sense and its object. The crooked line in the figure is the upper part of the human body, composed of the head and one of the shoulders, and the horizontal one directed towards it for an object influencing one of the organs of sense such as the eye or the ear. The letter ञ is used as an इत् or conventional temporary augment attached to several verbal roots to signify that each verbal root that has the letter affixed to it, is उभयपदी (conjugated in two different ways), but literally meaning that it has two feet. The forms of the letter ञ, as it is found in the oldest Sanskrit alphabet, were originally intended to show a root of a tree forked into two.

Buhler on Semitic Origin of Brahma Alphabet

57. Bühler[32] has tried to prove that forty-four letters of the ordinary Brāhma alphabet, traceable in the oldest inscriptions as well as the variants of the Bhattiprolu Inscriptions, contain representatives of, and derivatives from, all the twenty-two Semitic characters:

Table 5.—**Buhler's Comparison of Semitic and Brahmi Letters.**

Semitic letters	*Brāhma letters*	*Derivatives*
Aleph	a (initial)	ā (initial and medial)
Beth	ba	bha
Gimel	ga	gh (Bhaiṭṭprolu)
Daleth	dha	da, ḍa {ḍha, ḷa}
He	ha	
Waw	va	u {ū, o} (initial and medial)
Zain	ja	jha
Cheth	gha	
Theth	tha	ṭha, ṭa
Yod	ya	



Courtesy : Buhler, *Indian Palaeography*.

Fig. 12. **Oldest Semitic and Indian Alphabets.**

Semitic letters	*Brāhma letters*	*Derivatives*
Kaph	ka	
Lamed	la	ḷ (Bhaṭṭiprolu)
Mem	ma	ṃ (*Anusvāra*)
Nun	na	ṅa / ña / ṇa
Samech	ṣ (Bhaṭṭiprolu)	sa / ṣa
Ain	e (initial)	e (medial) *ai* (init. & med.) *i*, ī (initial & medial)
Phe	pa	pha
Tsade	ca	cha
Qoph	kha	
Resh	ra	
Shin	śa	
Taw	ta	

58. "With the exception of the signs for the sibilants *śa* and *ṣa-ṣa* which in consequence of modifications introduced, it would seem, independently by the Hindus, resemble later Aramaic characters, the Brāhma letters closely agree with or are most easily derivable from the old types of the North-Semitic alphabet. And the Brāhma initial vowels *A* and *E* as well as the consonants *kha*, *ga*, *gha*, *tha*, *dha*, *ba* and *va* point to particularly archaic prototypes, while *ha* and *ta* appear to be connected with somewhat modified forms. It would, therefore, seem that the Semitic alphabet became known to the Hindus at a period when the angle of its *Aleph* opened wide and the vertical cross-bar protruded about equally on the two sides, when the top of *Beth* was still closed, when *ga* consisted of an angle open below, when *Daleth* had not yet developed a tail, when *Waw* consisted of a semicircular head with a vertical depending from the middle, when *Cheth* had three bars, when *Theth* and *Ain* were quite or nearly circular and *Qoph* had a round head with a vertical hanging down from it, but when the simplified *He* consisting only of three strokes had been developed and the left half of the original crossbar of *Taw* had nearly or quite disappeared."

"Hence the *terminus a quo* for the introduction of the prototypes of the Brāhma letters lies between the beginning of the ninth century and the middle of the eighth, or about 800 B.C. And it seems to me that some further considerations make it probable that their actual importation took place at this early time."

Semetic Letters, Names and phonetic values	Hieretic	Phoenician		Himiaretic (Sabian)	ARAMAIC			Asokan Brahmi Character with same phonetic values	
		Early Phoenician	Moab stone Inscript		Sakkara Tima, Inscript	From Papyrus	Taxila Inscription	Kharoshthi	Brahmi
Aleph									
Beth									
Gimmel									
Daleth									
He									
Wav									
Zain									
Heth									
Teth									
Yodh									
Kaph									
Lamedh									
Mem									
Nun									
Samekh									
Ain									
Pe									
Tsade									
Koph									
Resh									
Shin									
Taw									

Fig. 13. **Comparison of Semitic, Kharoshthi and Brahmi Characters.**

Shamasastry : Theory of Indigenous Origin of Devanagari

59. It has been suggested that the word Devanagari is derived from *Devanam Nagaram*[33] (city of Gods), a term used for triangles and squares in which the symbols or hieroglyphics of Gods and goddesses used to be drawn. This is a stage prior to the worship of idols of Gods and goddesses in human form introduced after the sixth century. In the Tantric literature the identity of the goddess with the alphabet is described in great details.

60. R. Shamasastry wrote three articles on "A theory of the origin of the Devanagari Alphabet" in the *Indian Antiquary*, 1906. He summarised the apposite views of Bühler and Cunningham and thereafter unfolded his theory regarding the origin of the Indian Alphabet in great details. He claims that his theory is based on documentary evidence which is the Tantric literature which, he says, " provides fairer and a more reliable solution of the origin of the Devanagari than the Egyptian Papyrus scrolls do regarding the rise of the Phoenician or Semitic Alphabets". Shamasastry believed that, "if the Devanagari alphabet had not resulted from the Tantric hieroglyphics there would have been no Tantric literature at all. " For the whole of Tantric literature treats of nothing but the recitation of monosyllabic *mantras* and the drawing of mistic figures, which in their origin, must have been the pictures of the several parts of the human frame."[34] Shankaracharya in *Saundarya Lahari* described the goddesses thus : " O, mother (the letters known as) (*i*) Śiva, Śakti, Kāma and Kṣiti ; (*ii*) Ravi, Śitakiraṇa (the moon), Smara (Kāma), Haṃsa (the sun) and Śakra (Indra = Kṣiti), (*iii*) and then, (the letters known as) Para (Śakti), Māra (Kāma) and Hari (Indra); these syllables together with three *hrilekhās*, *hrīṁ* sounds put at the end of each of the three groups form the constituents of Thy name."[35] The names of these letters, says Shamasastry, " are the same as or are synonymous with the names of the hieroglyphics from which the letters have been derived". The tradition of representing gods by pictorial symbols dates back to the *Atharva-veda* period. The *Deva-Nagara* is described in the *Atharva-veda*.[36]

Indian Hieroglyphics : Symbols of Human Frame

61. Shamasastry says that hieroglyphic symbols were chiselled on the walls of ancient temples. Out of the carved and plain blocks of granite and sand-stone found in the bed of a river in the vicinity of Suddyah, Upper Assam, a triangular weather-worn block of granite is said to contain certain symbols engraved upon it. Major F. S. Hanny believed that, one or two of the letter-like figures assimilate with some of the characters

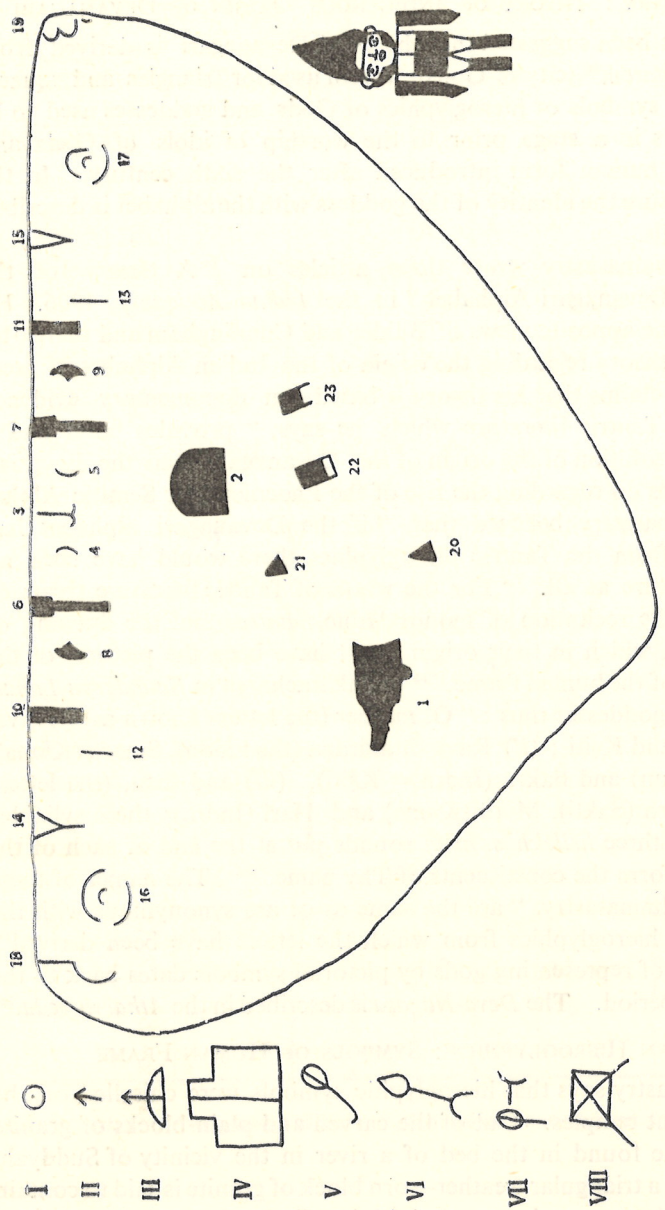

1 Head Dress ; 2 Head ; 3 Nose ; 4 & 5 Lips ; 6 & 7 Arms ; 8 & 9 Cheeks ;
10 & 11 Legs ; 12 & 13 Forehead when placed in parallel lines ; 14 & 15 Thighs ;
16 & 17 Eyes ; 18 & 19 Ears ; 20 & 21 Hands ; 22 & 23 Trunk.
I Chakra ; AII Arrow ;
III and IV Bow with Arrows
V Lotus Bud
VI and VII Some Weapons
VIII Shield or a Square.
I II III IV V VI VII VIII

Fig. 14. **Symbols engraved on a Granite Stone found near Suddyah, Upper Assam.**

of the ancient Devanagari alphabet. "They are no more than hieroglyphics intended to represent the several *Tatvas* of the Universe, corresponding to the several members of the human frame and thereby form and outline of the picture of a god or goddess". Shamasastry has arranged the symbols (*see Fig.* 14) in an order which suggests the human frame.

62. Shamasastry believed that the symbols carved on the foundation of the enclosure wall of the temple and also on the elephant near the Purna river... are evidently the pictures of the 'weapons' of the God. They are: (marked with Roman numbers) *I. chakra* ; *II.* an arrow ; *III.* a bow with an arrow ; *IV.* the form of a bow with an arrow ; *V.* a *lotus* bud ; *VI.* and *VII.* some weapons and *VIII.* a shield or a square. (*See* Fig. 14).

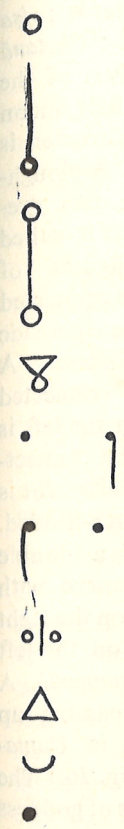


Fig. 15. **Hieroglyphics mentioned in Varivasyarahasya.**

Hieroglphics in Tantric Texts

The Tantric text *Varivasyārahasya* of Bhaskararaya describes the heiroglyphics[37] (*Fig.* 15) thus :

"In the middle of the forehead does a circular dot shine as the flame of a lamp. Above it is the semi-circle which resembles the half moon, both in the form and colour. Then comes above it the figure of *Rodhinī*, the obstructer, which has the form of a triangle, and is as brilliant as the moonlight. But the figure of *Nāda*, sound, is like a plough-share, as brilliant as a ruby, between two egg-shaped figures. The figure of *Nādānta*, the end of sound, is in the form of a plough-share, touching a circular dot drawn to its right. The figure of *Śakti* is like a plough-share, connected with the left one of two circular dots placed in parallel. The figure of *Vyāpika*, the pervader, is a triangle starting from a circular dot.

A perpendicular straight line terminated both above and below in a circle is what is called *Samanāh* with the mind. The same figure without the upper circle is called *Unmanāh*, the mind going up. About all these figures is the great circle."

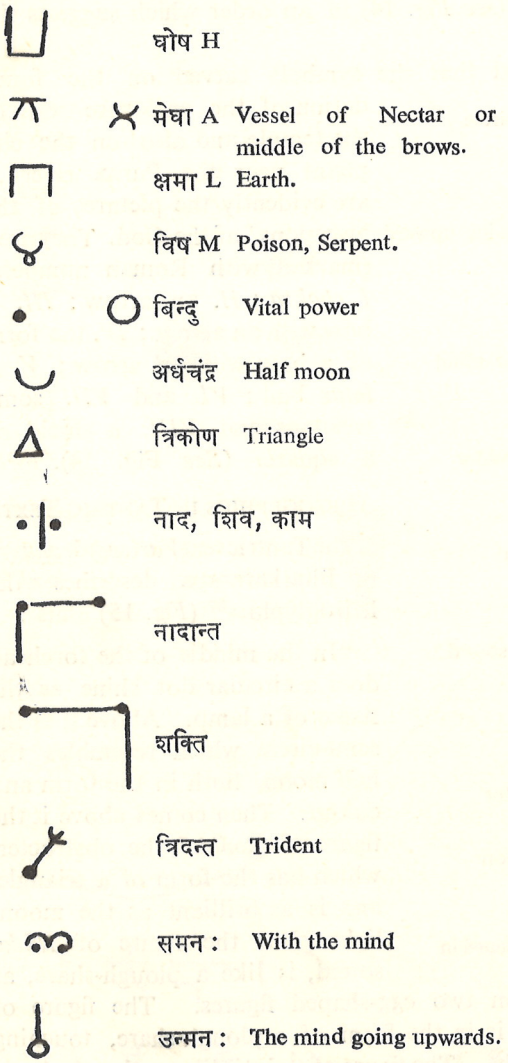


Fig. 16. **Hieroglyphics mentioned in the Siddhanta-Saravali.**

63. "*Ghosha*, sound, is the symbol of God Śiva, *i.e.* the letter ह; *Medhā* is the letter अ; *Kṣamā* the letter ल ; *viṣa* is the letter म ; *Chetanā* is the dot. Part of the moon is the half moon sign. The obstructer is the triangle. A plough-share between two eye-ball-like figures is called *Nāda*. The figures of a plough-share connected with dot on the right side is called *Nādānta*. A similar figure connected with a dot on the left is *Sakti*. A trident connected with a circular dot is *tri-śikhā*, i.e. tree-headed. The figure of a double semi-circular curve with two dots, one on the right and the other on the left side, is called *samanāh*. A straight line passing up from a circle is *Unmanāh*".[38] (*See Fig. 16.*) The different forms of goddess *Śakti* in different situations such as a straight line in the state of protection, a circle in the state of destruction and a triangle in the state of creation (*see Fig. 17*) are mentioned

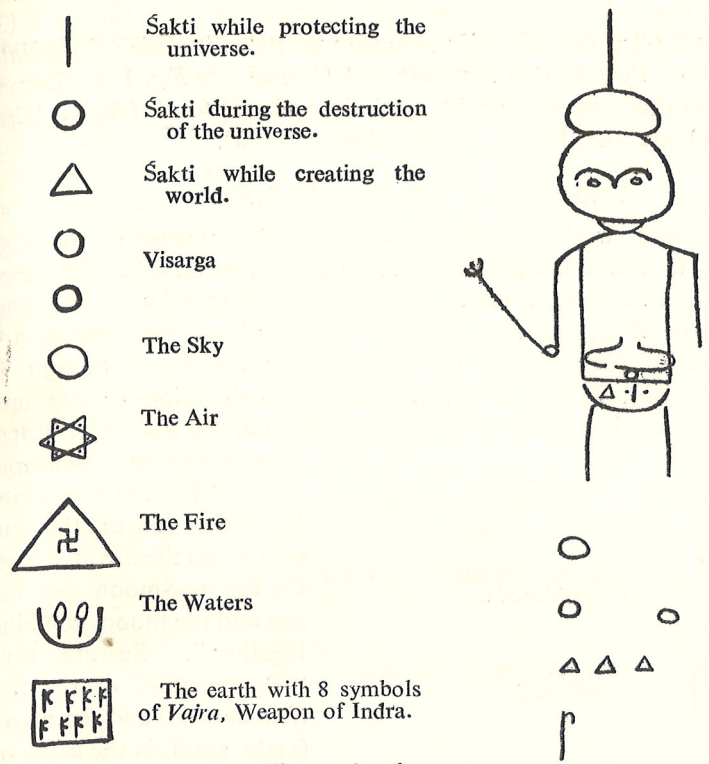

Śakti while protecting the universe.
Śakti during the destruction of the universe.
Śakti while creating the world.
Visarga
The Sky
The Air
The Fire
The Waters
The earth with 8 symbols of *Vajra*, Weapon of Indra.

Fig. 17. **Forms of Sakti in different situations.**

in the *tantric* texts[39] along with the description of the weapons of the Goddess. "The mother of the Universe, who is its primaeval cause and is as red as the early morning, protects the Universe with a white hook, and not only binds the wicked with her noose, but also kills them with her bow and five arrows."[40] (*See Fig. 18.*)

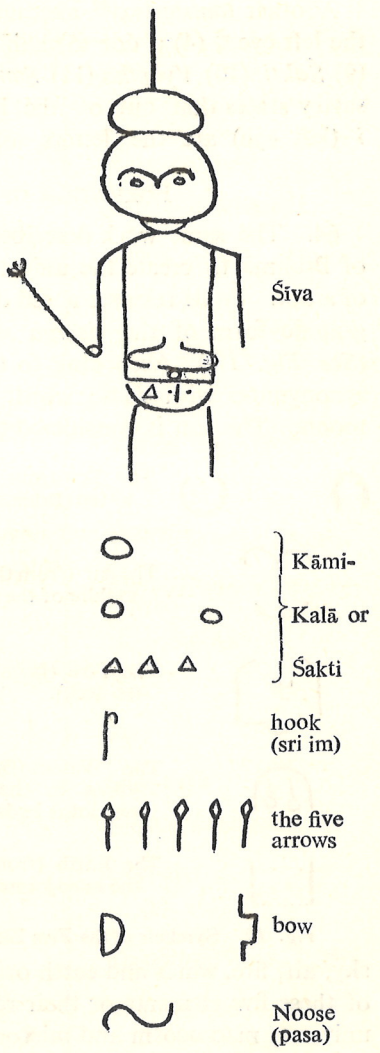


Fig. 18. **Siva and the Weapons.**

The symbol of Lord Śiva is drawn by placing the graphic forms representing the sounds of the *Mantra* mentioned in the *tantric* text. The *tantric* text *Vātutāgama* sounds a warning that the symbol can be drawn only with the traditional forms of the Devanagari graphemes.[41] The *Tantric Āgama* text *Siddhānta-Sārāvali* identifies some symbols used in the *tantric* worship with alphabetic graphemes.

Another *tantric* text[42] mentions twelve symbols (1) sky ह (2) fire र (3) the left eye ई (4) a dot (5) half moon (6) a triangle (7) *Nāda* (8) *Nādānta* (9) *Śakti* (10) *Vyāpika* (11) *Samanāh* and *Unmanī* (*see Fig.* 15). Shamasastry states that out of the 12 symbols referred to, *h* (sky) *r* (*fire*) *i* (left eye) are the letters of the *Mantra* (*hrīṁ*).

Formation of the Visarga Symbol

64. The same work describes the *visarga* as the outcome of the wish of Brahmā to create the universe. A drop from moon takes the shape of a dot. Śakti releases a red drop forming another dot completing the graphic form of the *visarga* which is the soul of the aspirate ह.[43] (*See Fig. 17.*) According to the commentator the word *Visarga* is synonymous with Vedic word *agnishomiya*, combination of fire and moon. The sun is considered to be the mixture of red and white drops.

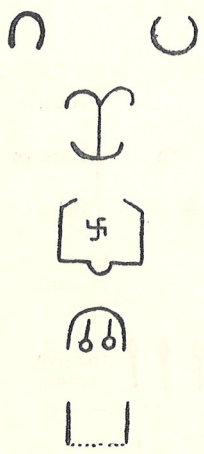

The Sky from the middle of to the (Brahma-raudhra).
The Air (from the neck to the middle of the brows).
The Fire (from the vavel to the neck).
The Waters (from the knee joints to the waist with two lotus buds.)
The Earth (from the legs to the knee joints.)

Fig. 19. **Symbols of the Five Elements.**

The *Taittiriya Brāhmaṇa* says " The fire enters into the rising sun or the sun enters into the fire at sunset. On the new-moon day the sun and the moon combine together ". Suśruta says " Combination of the fire (female seed) and the moon (male seed) is the cause of embryo which finds itself in the womb. The red drop released by Śakti bursts causing the eternal sound from which the letters and figures representating the sky, air, fire, water and earth originate" (*see Fig. 19*). The modifications of these five elements or their representative figures constitute the whole universe, macrocosm and microcosm.[44]

Tantric Hieroglyphics and the Devanagari Alphabet

65. Shamasastry has produced proof from the *Tantric* texts of the origin of certain Devanagari letters. His detailed discussion is summarised below :

The representation of *kāma* by symbol *ka* is suggested in the Vedic period. *Śatapatha* says " To which God ? To whom is for *kaya*, the

Roman letters	*Current Devanagari*	*Brāhmī*	*Tantric Hieroglyphics*	*Names of the Hieroglyphics*
k	क			Kāma, Śiva
e	ए			Ekapāda, Śakti
i	इ			Indrāṇī Kāmī-kalā
a	अ			Amṛta Kalaśa.
u	उ			Uma, Karṇa
o	ओ			Tāra, Dhruva
m	म			Bindu
h	:			Visarga, Agnishomīya
l	ल			Kṣiti, Lipi Pādau
v	व			Varuṇa Manipūra Padma.
r	र			Rukta, Bhuja, Dipagraka jjala.
y	य			Vāyu, Nāsika
s	श			Śara
sh	ष			Śūla
s	स			Pasa, Srāk
h	ह			Kapāla, Deha, Sirah
dh	ध			Dhanuh
d	द			do
p	प			Dakshiṇa Pārśva, Pārśva
m	म			Viṣa, Mahākāya, Meru
kh	ख			Khātīta, Unmani
gh	घ			Ghaṇṭādhāriṇī
ch	श			Charm amuṇḍadhāriṇī
t	ट			Tanka, Ardhachandra
n	न			Nādānta

Fig. 20. **Hieroglyphic, Brahmi and Devanagari Letters.**

dative of *ka* the God of *Prājapati* ? *ka* is *Prājapati*. To him let us offer our oblations.[45] (The following may be read with reference to *Fig 20*.)

क: "Though he has the power of growing spotless and is actuated with no desire whatsoever, he feels desirous, creates *a*, *Ka*, *cha*, *ṭa*, *ta*, *pa*, *ya* and *śa* and therefore *Iśvara* is called by the name *Kāma*. The technical name for him is *Tat*. *Kāma* contains within it the letter *ka*. As this (the hieroglyphic before the eyes) is verily *kāma* and *Tat*, it is chosen as the letter *ka*." [46].

ए It is called *Koṇatrayodbhava*, born from a triangle, because it is written like *a triangle*. The letter ए of the Nagari alphabet is always written like at triangle by strict adherents to tradition:"[47].

इ The Devanagari letter *i* is called by the name *Kāmakalā*, *Manmathakalā*, *Hārdakala*, part belonging to the breast, and *Bindutraya*, three dots. The *tantric* text *kādimata*, says "It is said that the form of the fourth vowel is three dots ... O, wise goddess listen how thy form is, in the view of thy devotee, identical with the form of that vowel and how the contemplation of that form is not only auspicious but also productive of immense property. The upper dot represents the face, the lower two are the two breast nipples. The rest of the limbs are to be meditated upon as the branches of these members." [48]. The hieroglyphic of three dots also represented *Indraṇi*, the initial symbol of which is इ.

उ Devanagari letter *u* is called by the names *Uma*, *Karṇa*, year, etc. This letter has the same form as the ear in the coins of Vāsudeva. The symbol of the ear was selected to represent the initial syllable in *Uma*.

अ It is called *Amṛteśvarī*, goddess of nectar, *Amṛtākarṣiṇī*, drawing nectar into herself, and *Medhā*, intelligence. Śakti is described as holding *amṛtakalaśa* which is worshipped for the goddess. The seal of *Medhā* is the middle of the brows, according to *tantric* worship and that part of the face is taken to represent the letter अ.

ॐ The letter *Om* is known by *tāra*, *tārakā* and *dhruva*, which means the pole star. Shamasastry believes that this sound used to be represented by tne picture of pole star. "It may be urged that the word *tārā* does not, when applied as a name of the letter under consideration, means a star, but a resonant, and that the word *druva* is applied as a name to the letter for the reason that sound is considered as kind of manifestation of Brahmā."

म *Bindu*, a dot, is considered to be male or female creative principle and is described as the source of the world and also of the alphabetic hieroglyphics, which represent the world. The *bindu* was therefore taken to represent the nasal sound in which all specific sounds are regarded as being merged.

: Two *bindus* (white and red) written one above the other "for the facility of entrance of the white into the red" are called by the name *visarga*, emission, and were taken to represent the *visarga* sound.

ल The Devanagari *la* is identified with the picture of the earth. The *Yoginihṛdaya* says "The earth contains smelling substance. Hence the word *lipi*, smearing, suggests a smelling substance."[49] The commentator adds "The characteristic property of the earth is scent. Hence the word *lipi*, dabbing with scent, suggests the earth. Hence the letter *l* (which represents the initial sound of that word) denotes the earth." The hieroglyphic of earth was therefore made use of to represent *la*.

व The letter *va* is represented by the hieroglyphic of lotus buds. *Vātulāgam* mentions[50] "The letter *va* is sacred to *Varuṇa*, the god of waters, and to waters. It has its abode in the marrow, being the fourth (of the body) in order of creation. Whatever names there are for waters are also the names of the letter *va*.

र The letter *ra* is regarded as sacred to fire and bears the name *Rakta* among its other names synonymous to fire. Bhaskaranand in his *Varivasyārahasya* says "The letter *ra* is like the smoky zone that stands just above a flame."[51]

य The letter *ya* is represented by the picture of nose. *Mantramahodadhi* mentions "The devotee should, contemplating the *bīja* of air, inhale the air which on being made dry inside his body, he should reduce to ashes by the *bīja* of fire (*ra*). Having forced out the ashes, he should exhale the air through the *bīja* of air."[52] The Devanagari letter *ya* is identified with nostril and called *vāyubīja*. The *Sidhānta-Sārāvali* mentions, "The *bījas*, hieroglyphics of the five elements, are *la*, *va*, *ra*, *ya* and *ha* respectively, commencing from the earth."[53] The symbol of the nose of Śiva was thus adopted to represent the sound *ya*.

ह The Devanagari letter *ha* is called by names Śiva, *gagana* (sky) and *haṁsa* (sun) and was identified with the head of Śiva. The symbol of sky was adopted to represent the initial sound of its name *haṁsa*.

66. The hieroglyphics of the weapons of the guardian deities of the ten quarters are identified with the alphabetic letters :

"I shall now talk of the extraction of that *mantra* which is comfortable to the meditator. Having pronounced the three syllables that stand for the nose, the goddess *Māya* and cudgel, and having also pronounced the seven letters, beginning from *ya* and ending with *sa* together with *ha* combined with *o* (the sky combined with the star), all these eight letters being combined with the nasal sound (*Indu*, Moon) the devotee has to chant the seven lettered *mantra*, namely *ya, ra, la, va, śa, ṣa* and *sa.*"[54].

ध Bhaskarananda in his commentary on *Lalitāsahasranāma* regards the dental letters *tha, da* and *dha* as *bījaksharas* of the bow, i.e. *dhanus*. Thus the hieroglyphics of bow was selected to represent the initial sound *dha*.

श The Devanagari letter *śa* is represented by arrow *Śara*.

ष Represented by the symbol of trident *Śūla* or *Triśūla*.

स Represented by the symbols of *pāśa* (noose) or *Śrak* (garland or chain).

प The letter *pa* bears names *dakṣapārśva* (right side of the trunk); *senānih* (commander of an army) ; *marīchih* (ray of light) ; *pavanah* (the air) and *śanih* (*saturn*). The hieroglyphics of the *dakṣapārśva* was adopted to represent the initial sound in the term *pārśva*.

म The Devanagari letter *ma* is called by names *viṣa* (poison); *mahāvīra* (great warrior) ; *mahākāya* (of great body) ; *Meru*, etc. The hieroglyphics of serpent indicating *viṣa* was therefore adapted to represent the initial sound *ma* in the term *meru*.

ख The letter *kha* bears the name *Khātīta* (beyond the sky or the head). The ancient Devanagari *kha* was represented by the symbol of *unmani* or *unmanāh* (mind going up).

घ The letter *gha* is called *ghaṇṭa-dhāriṇi* and the symbol of bell is adopted to represent the initial sound in the term *ghaṇṭa*.

च The letter *cha* is called *charmamunāddhara* meaning holding the head with its skin not removed. The Devanagari letter *cha* was represented by the head, cut off from the body.

The origin of the representation of the letters *gha* and *cha* by the bell and the head can be found in the *Tantric* text *Mantra-mahodadhi*. "I adore that great goddess *kāli* whose mouth, legs and teeth are as shining as a blue stone, who possessed the three eyes is not only decked with all kinds of ornaments all over her body, but is also armed with a sword, a discus, a club, arrows, a bow, an iron bludgeon, a lance, a shield, a head and a conch-shell, and whom the Creator, with a view to destroy the demons, Madhu and Kaitabha, when God Vishnu was asleep extolled for protection. I adore that great goddess of wealth who is born of the collected energy of the gods who bears in her hands such a rosary, a battle-axe, a club, arrows, the thunder-bolt, a lotus flower, a bow, a drinking vessel, a rod, a hatchet, a sword, a skin of water animals, a bell, a liquor-bottle, a lance, a noose, and the discus of Vishnu and who, as bright as a coral stone, destroyed the demon Sairibha."[55]

त The letter *ta* is known by the name *ṭanka* (a sickle); *ardhachandra* (the half-moon); *kamaṇḍalu* (a drinking vessel of the ascetics). The Devanagari grapheme for *ta* resembles these hieroglyphics.

न The Devanagari letter *na* is a representation of *nādānta*, i.e. end of sound.

67. Shamasastry asserts that the nomenclature of the letters of many of the Western alphabets seem to be fossilised mutilations or corruptions of the Sanskrit words that are contained as names of alphabetical letters in the two verses in the *Tripuropanišad* thus: *Kāma* (क) *Yoni* (ए) *Kamala* (ई) *Vajrapāṇi* (ल) *guhā* (ह्रीं), ह, स, *mātariśva* (क) *abṛam* (ह) *Indra* (ल) and *guhā* (ह्रीं) and स, क, ल, and ह्रीं. This first and most ancient *mantra* is the mother of the world.[56]

Identity of Goddess with the Alphabet

68. The remaining letters in the alphabet are formed by modification, transposition and addition of straight lines, curves or hooks to the above symbols. *Vātutāgama*[57] refers to this phenomenon in अ, इ, उ, ऋ, ऌ, ए, and ओ modified to आ ई etc. Shamasastry asserts[58] "Had not the Devanagari alphabets sprung up from the hieroglyphics or ideograms representing the god Śiva and the goddess Śakti, it would not have carried throughout its letters so many names of gods or goddesses. Nor would the four kinds of identities which form the basis of *trantric* mystery and speculation have originated. The identity of *Nāda*, the nine or twelve hieroglyphics described above with (1) the body of devotee (2) with the body of the god or goddess (3) with the alphabetic letters (*panchā śatkalah*) or with the monosyllabic *mantras* and the identity of the devotee with the god or goddess, are the chief causes of the endless speculations of *tantric* scholars. The identity of the goddess with the alphabet (*bhūta-lipi*) is thus described in the *Kāma-kalā Chindvalli* : 'The

Primary letters	Derivatives.
ग	∧ =ga.
ञ	⊏ =ṅa, ञ =ña, ञ =na.
ठ	○ =ṭha, ढ =ḍh, ∧ =ta, ⊙ =tha
ड	ड =ḍa.
ब	ब =pha, □ =b, भ =bha.

Fig. 21. **Primary Letters and their Derivatives.**

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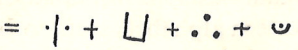
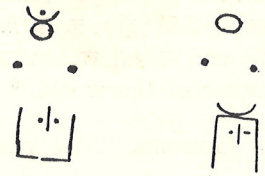
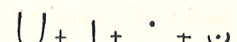
1. Mantra: Klîm = K+l+i+m = 

Hence the forms of Klîm.



2. Mantra: Hrîm = h+r+i+m = 

Hence the form of Hrîm.

Fig. 22. **Derivation of Mantras.**

goddess called *Madhyamā*, middle, has two aspects. She is either subtle or of visible form. The nine kinds of articulate sounds constitute her subtle and eternal form. The nine groups of the alphabetic letters make up her visible form '[59]... the whole of *trantric* literature treats of nothing but the recitation of monosyllabic *mantras* and the drawing of mystic figures, which in their origin must have been the pictures of the several parts of the human frame." The *Vātulāgama* says 'The gods are called the seeds (*bījas*) of the world. Alphabetical letters are elaborated out of (the hieroglyphics representing) the seeds."[60] ... *Dakṣiṇāmurtisaṃhita* describes the goddess as brilliant with her bodily members formed of the letters from अ to क्ष.'[61] Shamasastry concludes : " Thus it is only in the identity of the *Tantric* hieroglyphics with the letters of the Devanagari alphabet that we can find satisfactory explanations for almost all kinds of *Tantric* technical terms and speculations."

69. The Indian alphabet is known as Brahmi, *Mātṛka* and Devanagari. Goddess worshiped by Indians was called *Matṛ*, mother, and the picture of her called *Mātṛka*. The distinction between the symbol and the symbolised disappeared and the names of the gods and goddesses came to be applied to their symbols. Similarly names of vedic gods *Akṣara*, *Brahmā* became the names of the pictures. These pictures were being worshipped in Ancient India. Shamasastry points out that the whole combination of the symbols and the circles has been called the 'city of gods' in the *Taittiriya Āaraṇyaka*.[62] These symbols were drawn and coloured with saffron powder, bile of cow or blood. This process was called *lepa*, a word derived from the root to *lip* ' to daub '. The Indians identified the Universe with its creater Brahmā. The symbols of the five elements, Sky, Air, Fire, Water and Earth were modelled on the parts of the human body for the purpose of worship This is based on *Atharvan*. "The waters [there are] and what deities, what *virāj* with *Brahman*; Brahman entered the body; on [adhi] the body [is] Prajāpati. The Sun, the Wind, shared [respectively] the eye, the breath of man, then his other self gods bestowed [*pra-yam*] on Agni. Therefore, indeed one who knows man [puruṣa] thinks " This is *Brahman;* for all deities are seated in him as cows in cow-stall."[63] *Śivārchan Chandrikā* elaborates this further: " A rectangular figure with symbols of *vajra* represents the part of the body beginning from the legs as far as knees. A semicircle with two lotus symbols represents the part from the knees as far as the navel. A red triangle represents the portion from the navel to the neck. A black figure represents the part from the neck to the middle of the brows. A circle with the symbol of a flag represents the head,

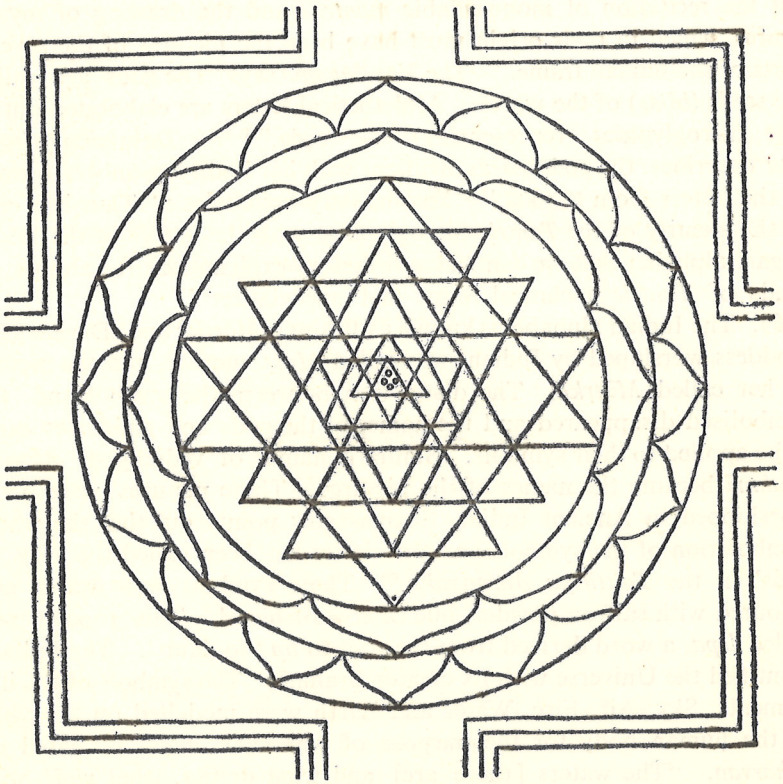


Fig. 23. **Srichakra.**

stretching from the middle of the brows to the *brahmarandhra,* a hole supposed to be at the centre of the head".[64]

The *tantric* literature is concerned with the worship of Śiva and Śakti represented by phallic symbols. Śakti is represented by triangular symbol[65] while Śiva is represented by a rod between two dots or a plough-share between two eggs.[66] The worship of mysterious figures and recitation of mystic syllables developed out of the *tantric* worship. The symbol of Śakti is described as " Two circles are two breast nipples. One circle is the face. Below them are three cave-like abodes (triangle). On knowing this as the enchanting form of Śakti (Kāmi-Kalā, the body of Kāma), one not only attains that enchanting form which is desired by all, but also becomes *Kāma* himself.[67]

Anachronism in Shamasastry's Theory

70. It would appear futile to seek the explanation of the origin of the Indian alphabet, firmly established in the third century B.C., in the *tantric* texts of much later date. Shamasastry himself accepts that none of the *tantric* texts belong to a date earlier than the fifth century A.D. He however relies on a reference of Bhaskarananda in his commentary *Tripuropaniṣad* that the followers of the *Ṛgveda* recite sixteen verses from the *Upaniṣad* in the middle of ritualistic performances and he concludes that this practice is attributable to the fact that the *tantric* worship is of antiquity and dates back to the Vedic times. He points out a reference [68] to sex in *Ṛgveda.* In support of his theory of antiquity of the *tantric* tradition Shamasastry cites ancient coins on which are stamped hierograyphics including the symbol of *Kāmikalā.* Shamasastry suggests that the origin of the pictorial representation of the gods and goddesses similar to those of *tantric* literature can be found in the Vedas and mentions the *Skambha*-Hymn.[69] He further points out the treatment of mystic figures and witchcraft in the *Atharva* in support of his claim.

Srichakra in Tantric Worship

71. The *tantric* Śrichakra is described in the *Atharva-veda*: " Eight-wheeled, nine-doored, is the impregnable stronghold of the gods ; in that is a golden vessel; heaven-going (*svarga)* these is in it, that verily the *knowers* of the *brahman* know. The *brahman* entered into the resplendent, yellow, golden, unconquered strong-hold, that was: all surrounded by glory."[70] The figure *Kāmilkalā* is to be inscribed on the Śrichakra. (*See Fig. 23.*)

" In the interior of the triangle which is the *Bindu*, the devotee has to meditate upon the lower face (of Śakti). Having meditated on the face drawn above the *Bindu* (dot) as well, he has to recollect the breast-nipples above the face. Then by meditating a triangular symbol of creation (*yoni*) he has to form gradually the picture of the Queen of the World in his mind.[71] Shamasastry adds, the picture referred to here is thus *Kāmi kala** turned upside down.

72. The same sort of symbol worship is described in case of lovers who desire meeting with their beloved as prescribed in the *tantric* witchcraft. " Having written in the centre of a large circle the picture of a woman together with her name, one has to think of her as languishing with the effects of love. However great may be the distance, she will run to the lover abandoning all her fear and shame."[72] At other place in the same work the practice of witchcraft to captivate a woman is described:

" The picture of a woman to be captivated, consisting of her face, throat, breast, navel and her generative organ, together with her peculiar ornaments and dress, shall be drawn with *rocana* (a bright yellow pigment prepared from the urine or bile of a cow) in a secluded place. The picture of *ankuśa* (a hook used to drive an elephant) combined with the symbol of sacred knowledge and the name of the beloved is to be attached. The symbol of *Madana* (Kāma=a straight line between two dots) is to be written in all the joints of the pictorial form."[73]

73. Shamasastry believes that:

" Witchcraft, prehistoric in its origin, *Athurvanic* in its infancy and *tantric* in its youth, old age and decay, has undergone only such modifications as misinterpretations and misunderstandings of past traditions rendered possible. It must necessarily follow that the process of drawing, with cow's bile or blood, the rudimentary outlines of victims, essential to the satisfactory performance of sorcery, is far anterior to the art of painting and coeval with and perhaps earlier than, the *Atharva-veda*."[74]

Regarding chronology of *Athurvan*, Shamasastry quotes Macdonell thus:[75]

"...it is important to note that these formulas (of the ritual literature) certainly existed in Vedic literature outside the *Athurvanic* schools and prior to any *Atharvan* redaction. The practice of sorcery if not its imprecations goes back to Indo-European times (*Avesta, Yatu*)."

Diringer on Origin of the Indian Scripts

74. " The fully developed Brahmi system, an outcome of the remarkable philological and phonological precision, wherein the early Indians surpassed all ancient peoples, provided the various Indian languages with an exact reflex of their pronunciation," says Diringer.[76] " Not a single link exists to cover the 2,000 years' gap between the Indus Valley script and the Indian writing, though the possibility of connection between the two scripts cannot be rejected categorically. A satisfactory answer to this problem will be obtained should strata bearing early Indian settlements be discovered, when their relationship to the Indus Valley civilization would be proved. It is useless to discuss the whole problem until sites in the land of origin of the *Rgveda* hymns have been sufficiently explored, excavated and studied. The whole history of India prior to the middle of the seventh century B.C. is, indeed, still the province of archaeology."

" Even if similarities could be proved between the shapes of the Indus Valley characters and those of the Brahmi letters, evidence would still be lacking that the latter descended directly from the former, unless the likeness of the signs belonging to the two systems corresponds with the identity of their phonetic values."

" The Indus Valley writing was presumably a transitional system or a mixed syllabic-ideographic script, whilst the Brahmi script was a semi-alphabet. As far as we know, no syllabic-ideographic script became alphabetic without the influence of another alphabetic script, and this was more important historically than the material origin of the single signs. No serious scholar has ever tried to show how the Indus Valley ideographic script could have developed into the Brahmi semi-alphabetic writing."*

75. "... I do not think that this theory (Brahmi script derived from Greek alphabet) is satisfactory : (1) the Indians came in direct contact with Greek civilization only after they had long been in contact with other peoples using alphabetic writings and the invention of the Brahmi script seems to be at least one or two centuries older than the earliest Indo-Greek cultural relations; (2) the main improvement of the Greek alphabet on the Semitic was the introduction of vowels, while the chief weakness of the Indian scripts is their unsatisfactory solution of vocalization."

" ... The chief objection to this opinion (derivation of Brahmi from Phoenician alphabet) is that there was no direct communication, at the requisite date, between India and the eastern shores of the Mediterranean, and it seems probable that the Phoenicians had no

*Shamasastry here refers to the *Chaitya* symbol.

*See Chapter II, paras. 30 and 31, 'Decipherment of Indus Script.' pp. 37-40.

influence whatever on the origins of the scripts of countries lying to the east of them."

" ... This view (that the Brahmi script descended from the South Semitic alphabet) is also unacceptable; although it is quite probable that there was direct communication between India and Southern Arabia, cultural influences of the latter on the former do not appear to have taken place at that early period; besides, the resemblance between the South Semitic letters and the Brahmi characters is slight."

" Still less probable is the derivation of the Brahmi alphabet from the cuneiform script propounded by Professor Rhys Davids, who suggested 'that the only hypothesis harmonizing these discoveries is that the Indian letters were derived, neither from the alphabet of the Northern, nor from that of the Southern Semites, but from that source from which these, in their turn, had been derived—from the pre-Semitic form of writing used in the Euphrates Valley.' This great authority on Buddhist literature is practically alone in his theory, which is unsubstantiated by any important evidence in its favour."

76. " All historical and cultural evidence is best co-ordinated by the theory which considers the early Aramaic alphabet as the prototype of the Brahmi script. The acknowledged resemblance of the Brahmi signs to the Phoenician letters also applies to the early Aramaic letters, while in my opinion there can be no doubt that of all the Semites, the Aramaean traders were the first who came in direct communication with the Indo-Aryan merchants. ... We need not assume that the Brahmi is a simple derivative of the Aramaic alphabet. It was probably mainly the idea of alphabetic writing which was accepted, although the shapes of many Brahmi signs show also Semitic influence and the original direction of the Brahmi character, from right to left, was also of Semitic origin. It is generally admitted that the earliest known form of the Brahmi is a script framed by Brahmans for writing Sanskrit, and it may be assumed that they were the inventors of this essentially national alphabet, regardless of the problem concerning the original source of the idea. The full developed Brahmi system, an outcome of the remarkable philological and phonological precision wherein the early Indians surpassed all ancient peoples, provided the various Indian languages with an exact reflex of their pronunciation."

" ... It is quite possible that the Semitic script appeared to him (inventor of the Brahmi) as semi-syllabic, as it would seem to any speaker of an Indo-Aryan language. Indeed, the Hebrew even now writes *k-t-b* to indicate any word having a meaning connected with " writing," although

the word would never be read *ktb*, but *kotab* (' he wrote '), *koteb* (' he is writing '), *ketob* (' I shall write '), and so forth, according to the sense of the sentence; whereas in an Indo-Aryan tongue, a word written with more consonants would have many meanings or no meaning at all (*e.g.*, in English c-t could mean ' cat,' ' cut,' ' cot,' ' city,' ' cute,' ' act,' ' acute,' or no meaning at all)."

" The fact that the sound *a* is inherent in all the consonants of the Indian scripts unless otherwise indicated, is perhaps due to the influence of the Aramaic language, in which the final *aleph* predominated."

" As to the date of the origin of the Brahmi script, nothing is certain; the eighth or seventh century B.C. seem to be the most probable."[77]

77. Dr. Diringer agrees[78] with the following conclusions of R. N. Cust :

" I. The Indian Alphabet is in no respect an independent invention of the people of India, who, however, elaborated to a marvellous extent a loan, which they had received from others."

" II. The idea of representing Vowel and Consonant Sounds by symbols of a pure alphabetic character was derived from Western Asia beyond any reasonable doubt. (The Indian characters, however, are semi-alphabetic and not pure alphabetic.)"

Walawalkar's Theory of Origin of Brahmi[79]

78. Walawalkar published his study on the origin of Indian alphabet '*Pre-Asokan Brahmi*' in 1951. He stated therein that the ' Brahmi of Asoka' is not the original Indian alphabet but an adaptation common to all the Indian scripts current during the time of Asoka and adopted for the engraving of his edicts. Walawalkar is of the opinion that " the Brahmi has not only been the mother script of the Indian and further Indian alphabets but it may also be proved (to be) the mother of the scripts of the Semitic branches of the ancient world.[80] Dravidians once occupied the whole of India. Indo-Aryans and the Aryo-Dravidians had a script and culture of their own; their script was the pre-Asokan Brahmi. The Asokan Brahmi is the corrupt form of ancient *Lipi*.[81]

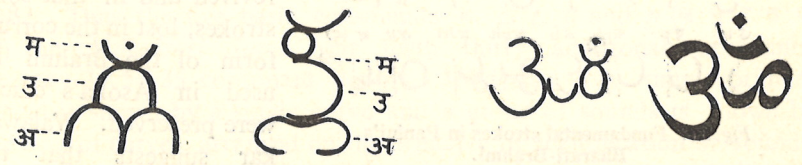


Fig. 24. **Construction of Letter ॐ** **Brahmi** **Devanagari**

79. Indian alphabet, according to Walawalkar is a signology. He has cited the letter ॐ (*Om*) in this respect as a phonograph written in linear signs अ ऊ म् (*a, u, m*). The graphic representation of these sounds is a phonetic notation clearly showing three distinct graphemic units (*see Fig. 24*). The first two curves represent अ, the middle curve उ and the top position म् which is a consonantal sign.[82] This sign is engraved on some of the ancient coins published by Prinsep and others (*Fig. 25*). *It resembles the Devanagari letter ॐ turned on its left side. Prinsep suggests that it may be Buddhist Chaitya, the Mithrai; flame Mount Meru, or Mount Abu, but adds that "it is yet unintelligiblec and the less said of it the sooner unsaid when the enigma shall be happily solved."[83] The graphic representation of the letter ॐ is described vividly in the thirteenth century commentary on *Geeta*, the '*Jnāneśvari.*'[84] This explanation of the graphic representation of the first letter in the Indian alphabet confirms the belief that the same was a phonography from the very beginning. King Manu, son of Vivaswata, first of all kings, is referred to, as *Praṇava* (ॐ), the first syllable to all Vedas.[85]

Fig. 25.

80. Walawalkar concludes that Brahmi is not a post-vedic invention of the Indo-Aryans nor is it a copy of the Aramaic script. The Brahmi of Asoka Edicts is not however the original prototype of Indian characters. The pre-Asokan as well as the early Maurya script differs in many respects from the Kalinga and Andhra from the late Mauryan and Sung. During the revival of Sanskrit learning the Sunga, Kalinga and the Gupta types of the scripts were revived and in that some strokes, lost in the corrupt form of the Brahmi lipi used in Asoka's edicts, were preserved. Walawalkar suggests that the

PANINI'S REFORMED BHARATI-BRAHMI
(by A. B. WALAWALKAR)

Fig. 26. **Fundamental strokes in Panini's Bharati-Brahmi.**

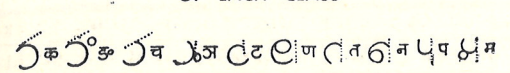
*See Plate 18, 'Indian Coins.'

Gupta type Brahmi should be considered a prototype of the North-Indian script and Kadamba, Central India box-headed and early Chalukya as a prototype of the South Indian scripts.

Evolution of Brahmi Letters from Crescent Marks

81. Walawalkar's main contribution is in respect of the explanation he offered regarding the evolution of the Brahmi letters from the crescent marks. *Maheśvari Sūtras* refer to the Brahmi graphemes. The graphemes arranged according to the similarity of the slopes of the signs and arrangement of simple, duplicated, triplicated, as curves (*see Fig. 26*). It will be clear from the study of the designs of the letters that they are made of crescents placed in different positions. Brahmi, however, appears not to have followed the *Māheśvari* technique in the formation of each and every letter. All the short-bar letters in the Devanagari like ट ठ ड ढ द etc. still retain the crescents. The inherent अ takes the form of the small-bar joining the crescent to the headline. The vertical joint to the headline has developed into a full verti-bar (*kānā*) on the right, in other letters like च, त, प. Some of the Roman letters still have a verti-bar on the right, i.e., B D H K P, etc., while it is absent in letters like C G Q S V etc. The *kānā* is not however seen in the South Indian and Further Indian descendents of Brahmi.

EVOLUTION OF NASALS FROM FIRST MEMBERS OF EACH CLASS



k → nk , c → nc , ṭ → ṇ , t → n , p → m .

Fig. 27. **Evolution of Nasals.**

82. The vowel उ and the hard consonants like क च ट त प take a single crescent. अ and soft consonants ग ज ड द ब, the semi-vowels य र ल व ह, the hard aspirates ख छ ठ थ फ and the sibilants श ष स, take two crescents. The vowels इ ए ॐ and the soft aspirates घ झ ढ ध भ take three crescents. The nasals ङ ञ ण न म take one crescent with small loop. This technique of graphemic representation is based on phonetic notation.

83. Thus, the five basic consonants *k*, *c*, *ṭ*, *t*, and *p* (क च ट त प) of the *Māheśvari Sūtra* bear forth thirty additional consonants, i.e. say 7×5=35 consonant letters, *Mūlākṣars*. A simple primary sound is shown by a single curve and a group of sounds is shown by a group of curves, arranged on the principle of identification of sounds, simple but intelligible. Every letter represents an independent and

(*Fig. 26*) distinct character of phonogram. The writing of nasal phonographs are the specialities of the Indian alphabet, and is a basic principle found in the Brahmi family of alphabets only. In Fig. 26, five sibilants are shown while the *Māheśvari Sūtra* gives three, श ष स. The reason of this is that the sibilants of guttural, lingual and labial classes are nearly the same in the outline, and hence for the use of notation

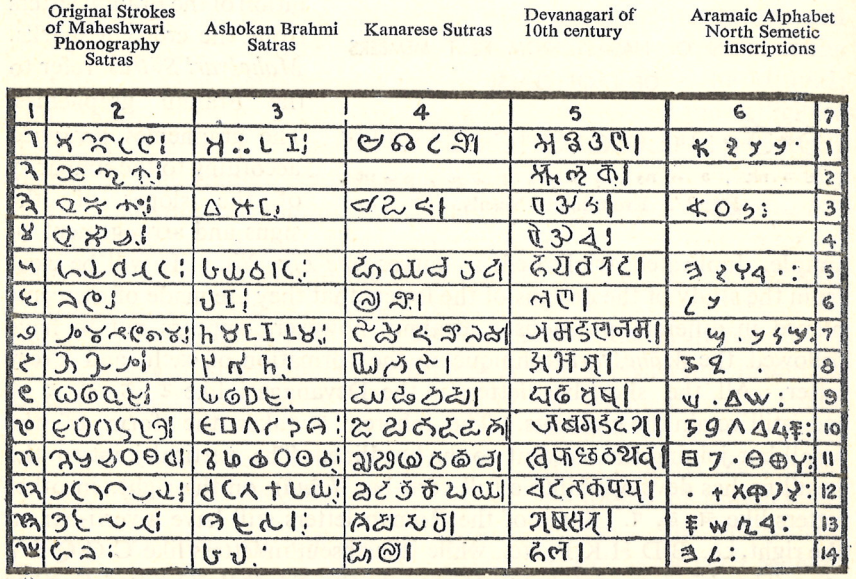

Original Strokes of Maheshwari Phonography Satras
Ashokan Brahmi Satras
Kanarese Sutras
Devanagari of 10th century
Aramaic Alphabet North Semetic inscriptions

Fig. 28. **Maheshwari Sutras, present Script, and its Development.**

only one outline has been selected. This also determines the main object of the '*Sūtrakār*'. Mahesvar, was particular in listing letters by general outlines of phonograms and had disregarded the phonetic classification. For example, the letters *jh-bh-ñ* and *gh-ḍh-dh-ṣ* are grouped as trinominal phonograms having a similarity of outline, as shown in Figs. 26 and 28. The unaccented last letters of the *Sūtras* possess similarities with the preceding ones, though they are of different values.

84. Walawalkar concludes that the Indian alphabet was complete in the second millennium B.C. and the Brahmi letters had taken traditional forms over a thousand years before Panini, proof of which is extant in Djokha Seal (2400 B.C.)* and later in Babylonian Tablet (Sixth century B.C.)† both found beyond India's frontiers.

**See* Fig. 5 p, 41 †*See* Chapter II Plate 20.

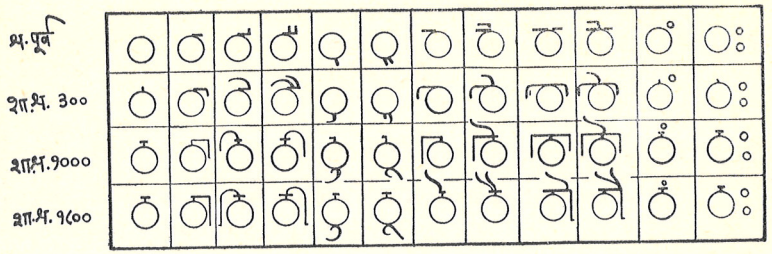


Fig. 29. **Development of Devanagari Matras** (A. B. Walawalkar).

In Devanagari the vowel-signs or *Mātrās* were written in the form of straight strokes. Initially a small vertical stroke was adopted to denote inherent *A* which was developed to indicate other vowels by the grammarians to indicate the distinction between the vowels and vowel-signs joining with consonants to form *Akṣara*.

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31. *See* ref. 21 above. 32. *See* ref. 22 above, pp. 82-84.
33. (*i*) .....अष्टचक्रा नवद्वारा ॥ २ ॥
देवानां पूरयोध्या । तस्या हिरण्यमयः कोशः । स्वर्गो लोको ज्योतिषा ऽऽ वृतः ।
योवैतां ब्रह्मणोवेद । अमृतेनावृतां पुरीं । तस्मै ब्रह्मचब्रह्माच । आयुःकीर्तिं प्रजाददुः ।
विभ्राजमाना हरिणीं । यससा संपरीवृतां । पुर हिरण्मयीं ब्रह्मा ॥ ३ ॥ *Taittiriya Āraṇyaka* I.27;
(*ii*) सुदर्शने च कौञ्चेच । मै नागे च महागिरौ ।
सत द्वट्टा रगमन्ता । सँह्यार्यं नगरं तव ॥ २ ॥ *Tattiriya Āraṇyaka* I.31.
(*iii*) Shamasastry, R., *The Indian Antiquary*, Nov. 1906, p. 255.
34. *Ibid*, p. 312.
35. शिवश्शक्तिः कामः क्षितिरथ रविश्शीतकिरणः । स्मरो हंसस्तदनु च परामारहरयः ॥
अमी हल्लेखाभिस्तिसृभिरवसानेषु घटिताः । भजन्ते वर्णास्ते तव जननि नामावयवताम् ॥
Saundarya Lahari, of Śri Śamkara-Bhagavatpāda, English translation etc. by Pandit S. Subramanya Sastri, and T. R. Shinivasa Ayyangar, Adyar, 1965, pp. 123-24.
36. अष्टाचक्रा नवद्वारा देवानां पूरयोध्या । तस्यां हिरण्ययः कोशः स्वर्गो ज्योतिषावृतः ॥ ३१ ॥
तस्मिन् हिरण्यये कोशे त्र्यरे त्रिप्रतिष्ठिते । तस्मिन्यद्येकाक्षं आत्मन्वैतत् तद्वै ब्रम्हविदो विदुः ॥ ३२ ॥
प्रभ्राजमानां हरिणीं यशसा सम्परी वृताम् । पुरं हिरण्ययीं ब्रम्हाविवेशा परा जिताम् ॥ ३३ ॥
Atharva X. 2. 31-33.
37. मध्ये फालं बिन्दुदीप इवाभाति वर्तुलाकार : । तदुपरि ततोऽर्धचन्द्रोऽन्वर्थ : कान्त्या तथाकृत्या ॥
अथ रोधिनी तदूर्ध्वं त्रिकोणरुपा च चन्द्रिकाकान्ति : । नादस्तु पद्मराग इवाण्डद्वयमध्यवर्तिनी सीरा ॥
नादान्तस्सव्यास्थितबिदुयुक्तलाङ्गलवत् । तिर्यग्बिन्दुद्वितये वामोङ्कच्छत्सिराकृतिश्शक्ति : ॥
बिन्दूङ्कच्छव्यश्राकाराथ व्यापिका प्रोक्ता । ऊर्ध्वाधोबिन्दुद्वितययुतरेखाकृतिस्समना : ।
सैवोर्ध्वबिन्दु हीनोन्मनास्तदूर्ध्वं महाबिन्दु : ॥ *Varivasyārahasya.*
38. घोषः शिवबीजो **हकारः** मेधा **अकारः** क्षमा **लकार :** विषं **मकारः** ततः चेतना बिन्दु चन्द्रखण्डाऽर्धचन्द्रः व्यश्रं त्रिकोणं निरोधि । दृग्वृत्तसीरः दृग्वृत्ताभ्यां युक्तस्सीरः अनेन नाद उच्चते । अरुणकिरणहलः अरुणकिरण आदित्यः दक्षिणपार्श्वबिन्दुः तद्युक्तो हलः अनेन नादान्तस्थ ग्रहणम् । सेन्दुसीरः वामपार्श्वबिन्दुयुक्तसीरः अनेन शक्तिकलायाः प्रस्तारो दर्शितः वृत्तार्कत्रिशिखं दक्षिणबिन्दुयुक्तत्रिदण्डः त्रिशूलं वा अथ द्विबिन्दुकलिता द्विकुब्जा रेखा दक्षिण-वामबिन्दुद्वययुक्ता द्विवक्रा समनाः कला । बिन्दुविलसदृजुरेखाकृतिरुन्मनाः कला ।
Siddhānta-Sārāvali, of *Aghorasivāchārya.*

39. ऋजुरेखामयी विश्वस्थितौ प्रथितविग्रहा । तत्संहृति दशायां तु बन्दैवं रूपमाश्रिता ॥
प्रत्यावृत्तिक्रमेणैवं शङ्खाटवपुरुज्वला...॥ *Partyabhijnānatantra, Kāmakalā-Cidvalli.*
40. सृण्येव सितया विश्वचिंणीः । पाशेन प्रतिबध्नात्यभीकान् ।
इषुभिः पञ्चाभिधनुषा च । विध्यत्यादिशक्तिररूणा विश्वजन्या । *Tripuropanisad.*
41. शिवमेकं विजानीयान्मन्त्रमूर्तिं परं शिवम् । नादं किरटिमित्युक्तं बिन्दुर्वक्त्रमुदाहृतम् ॥
हकारं देहमित्युक्तं द्वयोतुङ्कौ भुजौ तथा । वह्निपादद्वयं विद्यात् मन्त्र मूर्तिरुकदाहृता ॥
शिवमन्त्रान्मूर्त्यद्धारकृतिः नागरलिपिभिरुद्धारयितुं युज्यते व्यतिरिक्तलिपिभिर्नोद्धारयितुं युज्यते ॥
Vātulāgama.
42. हल्लेखायास्वरुपं तु व्योमाग्निर्वामलोचनम् । बिन्द्वर्धचन्द्ररोधिन्यो नादनादान्तशक्तयः ॥
व्यापिकासमनोन्मन्य इति द्वादशसंहृतिः । बिन्द्वादीनां नवानां तु समष्टिर्नाद उच्यते ॥
Varivasyārahasya.
43. विश्वसिसृक्षावशतस्वार्धा शक्तिं व्यलोकयद्ब्रह्मा । बिन्दुर्भवति तमिन्दुं प्रविशति शक्तिस्तु रक्तबिन्दुतया ॥
एतद्बिन्दुद्वितयं विसर्गसंज्ञं हकारचैतन्यम् ॥ *Varivasyārahasya.*
44. स्फुटितादरुणाद्विन्योनार्दब्रह्मांङ्कुरो व्यक्तः । तस्माद्गगनसमीरणदहनोदकंभूमिवर्णसंभूतिः ॥
एतप्तञ्चकविकृतिः जगदिदमण्डप्रजाण्डपर्यन्तम् । *Varvasyārahasya.*
45. कस्मै देवाय । कस्मै काय प्रजापतये देवाय । प्रजापतिर्वा कः तस्मै हविषा विधेम ।
Śatpatha Brāhmaṇa VII.4.1.19.
46. निरञ्जनोऽकामत्वेनोज्जृम्भते । अ, क, च, ट, त, प, य शा न्सृजेत । तस्मादीश्वरः कामोऽभिधीयते तत्परिभाषया । कामः ककारं व्याप्नोति । काम एवेदं तत्तदिति ककारो गृह्यते ।
Tripurātāpani Upaniśad.
47. कोणत्रयवदुद्भवो लेखो यस्य तत् नागरलिप्या साम्प्रदायिकैरेकारस्य त्रिकोणाकारतयैव लेखानात् ।
Setubandh.
48. तत्तुरीयस्वरुपं तु बिन्दुत्रयमितिरितम् । तदात्मत्वं तु देव्यास्ते साधकेन च यद्भवेत् ॥
तद्भावनां शृणु प्राज्ञे महोदयकरीं शुभाम् । ऊर्ध्वबिन्द्वात्मकं वक्त्रमूधोबिन्दुद्वयात्मकम् ।
कुचद्वयं च तच्छेषैश्शेषाङ्गानि च भावयेत् । *Patala 4, Kādimata.*
49. " वसुन्धरागतो गन्धस्तल्लिपिर्गन्धवाचकः । "
वसुन्धरायाः पृथिव्या गुणो गन्धः । तल्लिपिः पृथिवीवाचको वर्णो लकारः ।
Yoginihrdaya—Commentary.
50. वकारं वारूणं ह्यापश्चतुर्थं मेदसि स्थितम् । जलस्य यानि नामानि सन्ति तान्यपराणिच ॥
वकारस्यापि नामानि ..... । *Vātulāgama.*
51. दीपाग्रस्थितकज्जललेखावत्। *Varivasyārahasya*
52. वायुबीजं स्मरन्वायुं सम्पूर्येमं विशोषयेत् । स्वशरीरयुतं मन्त्री वह्निबीजेन निर्दहेत् ।
.....बहिर्भस्म समुत्सार्य वायुबीजेन रेचयेत् । *Mantra-Mahodadhi.*
53. पृथिव्यादीनि बीजानि ल व र य ह कारकाः *Sidhānta-Sārāvali*
54. वक्ष्येऽधुना मनोस्तस्योद्धारं ध्यात्सुखावहम् । पाशं मायां सृणि प्रोच्य यादीन्सप्तेन्दुसयुतान् ।
तारान्वितं नभस्सप्तवर्णं मन्त्रततो जपेत् ॥ *Mantra-Mahodadhi.*

55. खड्गं चक्रगदेषु चपिपरिधान् शूलं भुशुण्डीं शिरः । शङ्खं सन्दधतीं करैस्त्रिनयनां सर्वाङ्गभूषवृताम् ।
यामस्तोत्स्वपिते हरौ-कमलजो हन्तुं मधुं कैटभं । नीलाश्मद्युतिमास्यपाददशनां सेवे महाकालिकाम् ॥१४४॥
अक्षस्रक्परशुंगदेषुकुलिशं पद्मं धनुः कुण्डिकां । दण्डं शक्तिमसिं च चर्म जलजं घण्टां सुराभाजनम् ॥
शूलं पाशसुदर्शने च दधतीं हस्तैः प्रवालप्रभां । सेवे सैरिभमर्दिनीमिह महालक्ष्मीं सरोजोद्भवाम् ॥१४५॥
Mantra-Mahodadhi.

56. कामो योनिः कमला वज्रपाणिः । गुहा ह सा मातरिश्वाभ्रमिन्द्रः ।
पुनर्गुहा स क ला मायया च । पुरुच्येषा विश्वमाता दिविद्येाम् ॥ *Tripuropaniṣad.*

57. अकारं च इकारं च उकारं च ऋकारकम् । ऌकारं चैव एकारं तथैवौकारमेव च ॥
एते सप्त स्वराः प्रोक्ताः प्रकृतिस्तुं समीरिताः । शेषास्तु विकृतिः प्रोक्ताः तेषामुद्भवमुच्यते ॥
अकाराच्चोद्भवाकारमिकारेत्वींसमुद्भवः ॥ *Vātulāgama.*

58. *Indian Antiquary*, Nov. 1906, pp. 312-13

59. द्विविधा हि मध्यमा सा सूक्ष्मा स्थूलाकृतिस्थिरा सूक्ष्मा ।
नवनादमयी स्थूला नववर्गात्मा तु भूतालिप्याख्या ॥ *Kāmakalā-Chidvalli.*

60. देवानां बीजनामानि वर्णास्तत्र प्रकल्पिताः । तस्माद्वर्णान् चेक्ताने ज्ञात्वा मन्त्रं समुद्धरेत् ॥
Vātulāgama

61. अकारादिक्षकारानावर्णयवसुंन्दरीम् । *Dakshināmūrtisaṃhitā*, Chap. 16.

62. *Taittiriya Āraṇyaka* 1, 27; *See* Ref. 33.

63. या आपो याश्च देवता या विराड्ब्रह्मणासह । शरीरं ब्रह्मप्राविच्छरीरे ऽधि प्रजापतिः ॥ ३० ॥
सूर्यश्चक्षुर्वातिः प्राणं पुरुषस्य वि भेजिरे । अथस्येतर मात्मानं देवाः प्रायच्छन्नग्नये ॥ ३१ ॥
तस्माद्वै विद्वान्पुषमिदं ब्रह्मेति मन्यते । सर्वाह्यऽस्मिन्देवतागावो गोष्ठ इवासते ॥ ३२ ॥
Atharva-veda XI. 8. 30-32.

64. पादाभ्यां जानुपर्यन्त चतुरस्रं सवज्रकम् । जान्वोरानाभि चन्द्रार्धनिभं पद्मद्वयसमायुक्तम् ।
नाभितः कण्डपर्यन्तं त्रिकोणं रक्तवर्णकम् । कण्ठाद्भ्रूमध्यपर्यन्तं कृष्णं वायोस्तु मण्डलम् ।
भ्रूमध्याद्ब्रह्मरन्ध्रान्तं वर्तुलं ध्वजलञ्छितम् । *Śivārchna Chandrikā*

65. त्रिकोणरूपा योनिस्तु ... शक्ति ... विश्वयेानिरितिख्याता । *Jñanarṇara*, Ch. X.

66. (i) बिन्दुद्वयान्तरे दण्डशिव रुपो मणिप्रभः । *Nityāṣodaśikārṇava*, Part II.
(ii) अण्डद्वयमध्यवर्तिनी सीरा *Varivasyārahasya*, Part II.

67. द्वामण्डला द्वा स्तना बिम्बमेकं । मुखं चाद्यरूणि गुहा सदनानि ।
कामीकलां कामरुपां विदित्वा । नरो जायते कामरूपश्च काम :॥ *Tripuropanisad.*

68. विष्णुर्योनि कल्पयतु त्वष्टा रुपाणि पिंशतु । आ सिंचतु प्रजापतिर्धाता गर्भं दधातु ते । *Ṛgveda.* X. 12. 184.1.

69. *Atharva veda* X. 7

70. *Atharva-veda. See* ref. 36 above. (Translation by William Dwig ht Whitney.)

71. त्रिकोणे बैन्दवस्थाने अधोवक्त्रं विचिनायेत् । बिन्दोरुपरीभागे तु वक्त्रं सचिन्त्य साधक : ॥
तदुपर्येव वक्षोजद्वितयं सस्मरेब्दुध :। तदुपर्येव योनिं च क्रमशो भुवनेश्वरीम् ॥
Quotation from *Chatuśśti*, p. 65 *Saundirya Lahari* M. O. L. Edition.

72. लिखित्वा विपुलं चक्रं तन्मध्ये प्रतिमां यदि । नाम्ना लिखति संयुक्तां ज्वलन्ती चिन्तयेतत् ।।
शतयोजनमात्रस्था त्वद्दृश्यापि च या भवेत् । भयलज्जाविनिर्मुक्ता साप्यायाति विमोहिता ॥
P. 1 Nityāsodasikārnava

73. लिखेद्रोचनयैकान्ते प्रतिमामननीतले । स्वरूपां चात्र शृंगारवेषाभरण भूषिताभू ।
तत्फालगळहन्नाभिजन्ममण्डलयोजिताम् । जन्मनाममहाविद्यामंकुशान्तावदर्भितीम् ।
सर्वांगसंधिसंलीनमालिख्य मदनाक्षरम् । *Nityāṣodaśikārṇava* Part I

74. Shamasastry, *The Indian Antiquary*, Oct. 1906, p. 272.

75. Macdonell (Prof.), *Atharva-veda* (Grundriss), p. 66.

76. Diringer, David, *The Alphabet*, p. 336.

77. *Ibid*, p. 328–336

78. *Ibid*, p. 337.

79. Walawalkar A. B., *Pre-Ashokan Brahmi*.

80. *Ibid*, p. 5.

81. *Ibid*, p. 9.

82. *Ibid*, p. 10.

83. Prinsep, James, " The Legends of the Saurashtra Group of Coins Decyphered," *Essays on Indian Antiquities*, Vol. I, p. 433.

84. अकार चरणयुगल । उकार उदर विशाल ।। मकारु महामंडळ । मस्तकाकारे ।।
Dnyānhsvari I-19.

85. वैवस्वतो मनुर्नाम माननीयो मनीषिणाम् । आसान्महीक्षितामाद्यः प्रणवश्छंद् सामिव ॥

Origin of the Brahmi Script

(Chapter III : Plates 31 to 35)